DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

PROCESSED CHILE EARTHQUAKE RECORDS OF 3 MARCH 1985 AND AFTERSHOCKS

Compiled
by
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USGS Open File Report 87-195

This report is preliminary and has not been reviewed for conformity with Geological Survey editorial standards.

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I. INTRODUCTION

At 22:47:069 (GMT) on 3 March 1985, an $M_s = 7.8$ earthquake occurred offshore Valparaiso in Central Chile. This earthquake had a foreshock at 22:46:56. The hypocenter parameters of the main shock as well as the foreshock are summarized by Algermissen (1985) and repeated in Table 1.

The earthquake was recorded by 31 accelerographs belonging to the Central Chile Accelerograph Network operated by Saragoni and others (1985). In addition to the recordings of the main shock, several important aftershocks were also recorded.

The 3 March 1985 Central Chile Earthquake is one of the major subduction zone earthquakes of this century. The records of strong-motions obtained in various locations throughout Chile with different site conditions will provide a basis for an in-depth study of this earthquake. The performance of structures in Chile are currently under investigation by several researchers both from Chile and the USA; therefore, the strong-motion records will be of use to them and others.

The purpose of this report is to summarize the various records obtained in Central Chile during the main events of 3 March 1985 as well as the aftershocks and also to present the pertinent digitized data as part of an agreement between the Chilean and USGS scientists. The project was supported by the NSF-USGS Panel convened to review proposals for investigating the earthquake.

This report is not intended to be a complete presentation of all the records and related information about the 3 March 1985 earthquake and aftershocks. To the extent records and related information were made available, the processing was completed and this report was compiled. It should be mentioned that there are additional sets of undigitized data and should they be made available, then an addendum to this report will be prepared and issued accordingly.

Additional copies of this report may be obtained from the Open-File Services Section, Branch of Distribution, USGS, Box 25425, Federal Center, Denver, Colorado 80225. Digital data corresponding to the plots of the analysis sections 1, 2 and 3 (uncorrected data, corrected data, and response spectra, respectively), may be obtained on magnetic tape from the Environmental Data and Information Service, NOAA, Mail Stop D62, Boulder, Colorado 80302.

TABLE 1.--Hypocenter parameters of the principal shocks of March 3, 1985
(From Algermissen, 1985)

Origin time	Latitude	Longitude	Depth km.	m_b	M_s	Source
22:46:56.4	33.118°S.	71.822°W.	33N.*	5.2	___	NEIS (PDE No. 9-85, March 21, 1985).
22:47:06.9	33.155°S.	71.980°W.	33N.*	6.9	7.8	Do.
22:46:56.9	33.24°S.	71.86°W.	16			University of Chile, Department of Geophysics (E. Kausel, oral commun., 1985) (only initial shock located).

* Normal default depth set by NEIS.

II. DESCRIPTION OF RAW DATA, LOCATION OF INSTRUMENTS, DESCRIPTION OF INSTRUMENTS

All of the data acquired in Central Chile during the main shock of 3 March 1985 and the following aftershocks were recorded on film. Although other types of instruments (accelerographs) were also used, all the records that are referred to in this report are from Kinemetrics SMA-1* type accelerographs.

At the time the funds for this project were allocated, the Chilean counterparts of this project had already digitized four of the main shock records obtained from Llolleo, Vina del Mar, Valparaiso (UFSM), and Valparaiso (Almendral). The originals of contact copies of these four records were not available for redigitizing in the U.S. for the purpose of comparing the results of different techniques.

Limited number of records for digitizing at USGS, Menlo Park, were provided by Chilean counterparts. The records provided were contact prints on mylar made from contact negatives of the original records. In both stages of printing, sections of the record of approximately 2 ft (60 cm) length with overlaps were printed separately, and carefully cut and taped in Chile for the final digitizing copy. The digitizing in the U.S. provided by the commercial digitizer, with a least count of 1 micron (10^{-6} m), and an RMS error of 10 microns when working with these records, detected slight changes in trace location and trace clarity at these joins. In some cases, where a join occurred well after the strong-motion had arrived, processing was not continued past the join. The effect of included joins on the final corrected accelerations, velocities and displacements are not considered to be significant.

The location of strong motion stations of the Chile network are summarized both in Figure 1 and Table 2 both of which are adopted from Saragoni and others (1985). Figure 1 also provides the orientations and peak accelerations (of the 1985 event) and Table 2 provides the coordinates as well as the peak accelerations. For the sake of completeness, the descriptions, locations, and site conditions of all instruments of stations in Chile are summarized in Table 3.

The four main shock records digitized in Chile and their corresponding spectra are provided in Appendix A.

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* Commercial name only and does not constitute endorsement of the product.

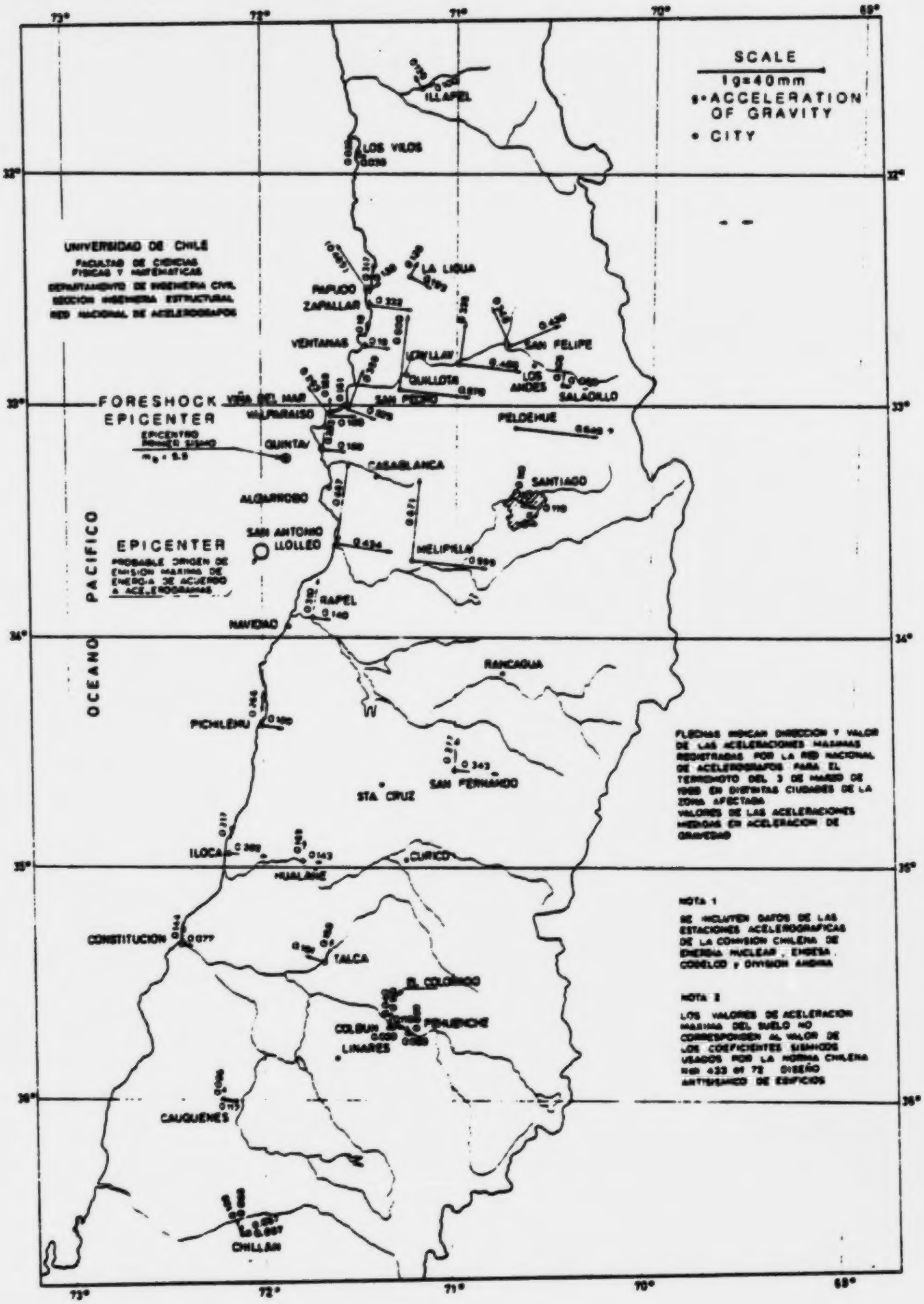

SCALE
1g=40mm
g=ACCELERATION OF GRAVITY
• CITY
73°
72°
71°
70°
69°
32°
33°
34°
35°
36°
UNIVERSIDAD DE CHILE
FACULTAD DE CIENCIAS FISICAS Y MATEMATICAS
DEPARTAMENTO DE INGENIERIA CIVIL
SECCION INGENIERIA ESTRUCTURAL
RED NACIONAL DE ACELEROGRAFOS
FORESHOCK EPICENTER
EPICENTRO PRIMER SISMO
EPICENTER
OCEANO PACIFICO
ILLAPEL
LOS VILOS
LA LIGUA
PAPUDO
ZAPALLAR
VENTANAS
LLAY LLAY
SAN FELIPE
LOS ANDES
SALADILLO
QUILLOTA
VIÑA DEL MAR
VALPARAISO
SAN PEDRO
PELDEHUE
QUINTAY
CASABLANCA
SANTIAGO
ALGARROBO
SAN ANTONIO
LLOLLEO
MELIPILLA
RAPEL
NAVIDAD
RANCAGUA
PICHILEMU
SAN FERNANDO
STA. CRUZ
ILOCA
HUALAÑE
CURICO
CONSTITUCION
TALCA
EL COLORADO
COLBUN
PEHUENCHE
LINARES
CAUQUENES
CHILLAN
NOTA 1
NOTA 2

Figure 1. Strong-motion stations of the Chilean strong-motion network (from Saragoni and others, 1985).

Table 2

Registered[*] Maximum Accelerations of the 3 March 1985 Central Chile Earthquake

(Adopted from Saragoni and others, 1985)

No.	Station	Coordinates	Component	Maximum Acceleration[†] (G)
1	Illapel	31°38'	N20W	0,120
	(D.I.C.)	71°10'	S70W	0,100
			Vertical	0,056
2	Los Vilos	31°55'	NS	0,254
	(C.CH.E.N.)	71°30'	EW	0,036
			Vertical	0,021
3	La Ligua	32°30'	N70W	0,193
	(D.I.C.)	71°06'	S20W	0,126
			Vertical	–
4	Papudo	32°31'	N50E	0.128
	(D.I.C.)	71°27'	S40E	(0,469)[**]
			Vertical	0.110
5	Zapallar	32°34'	NS	0,317
	(C.CH.E.N.)	71°28'	EW	0,332
			Vertical	0,228
6	Ventanas	33°02'	NS	0,180
	(CHILECTRA)	71°37'	EW	0,180
			Vertical	0,140
7	San Felipe	32°45'	S10E	0,348
	(D.I.C.)	70°44'	N80E	0,430
			Vertical	0.208
8	Llay-Llay	32°50'	N80W	0,335
	(D.I.C.)	70°58'	S10W	0.486
			Vertical	–
9	Saladillo	32°55'	NS	0.106
	(ANDINA)	70°28'	EW	0,085
			Vertical	0,052
10	San Pedro	34°36'	NS	0,600
	(ENDESA)	71°00'	EW	0.570
			Vertical	0,375
11	Viña del Mar	33°02'	N70W	0.228 (+)
	(D.I.C.)	71°35'	S20W	0.356 (+)
			Vertical	0.171 (+)
12	Valparaíso	33°01'	N50E	0,293 (+)
	(El Almendral)	71°38'	S40E	0.163 (+)
	(D.I.C.)		Vertical	–
13	Valparaíso	33°01'	S20E	0.164 (+)
	(U.F.S.M.)	71°38'	N70E	0,179 (+)
	(D.I.C.)		Vertical	0.125 (+)
14	Peldehue	33°08'	EW	(0.640)[**]
	(D.I.C.)	70°41'	NS	–
			Vertical	–
15	Quintay	33°16'	NS	0.203
	(ENDESA)	71°19'	EW	0.182
			Vertical	0,131
16	Santiago	33°27'	NS	0,114
	(ENDESA)	70°40'	EW	0,114
			Vertical	0,073
17	Llolleo	33°41'	S80E	0,426 (+)
	(D.I.C.)	71°36'	N10E	0,669 (+)
			Vertical	0,852 (+)
18	Melipilla	33°41'	EW	0,599
	(C.CH.E.N.)	71°13'	NS	0,671
			Vertical	0,593
19	Rapel	34°01'	NS	0,310
	(ENDESA)	71°40'	EW	0,144
			Vertical	0,110
20	Pichilemu	34°23'	NS	0,266
	(C.CH.E.N.)	72°01'	EW	0.180
			Vertical	0,132
21	San Fernando	34°36'	NS	0.227
	(C.CH.E.N.)	71°00'	EW	0,343
			Vertical	0,121
22	Iloca	34°55'	NS	0,216
	(C.CH.E.N.)	72°13'	EW	0,282
			Vertical	0,087
23	Hualañé	34°58'	NS	0,169
	(C.CH.E.N.)	71°49'	EW	0,143
			Vertical	0,100
24	Constitución	35°18'	NS	0,144
	(C.CH.E.N.)	72°19'	EW	0,077
			Vertical	0,039
25	Talca	35°26'	N80W	0,161
	(D.I.C.)	70°40'	N10E	0.168
			Vertical	0,077
26	Colbún	35°43'	NS	0,037
	(ENDESA)	71°26'	EW	0.034
			Vertical	0.022
27	El Colorado	35°43'	NS	0.120
	(ENDESA)	71°26'	EW	0.113
			Vertical	0.060
28	Pehuenche	35°44'	NS	0,031
	(ENDESA)	71°14'	EW	0.023
			Vertical	0,020
29	Cauquenes	36°00'	NS	0,086
	(C.CH.E.N.)	72°13'	EW	0,117
			Vertical	0,046
30	Chillán Viejo	36°36'	N80E	0,057
	(D.I.C.)	72°06'	N10W	0.065
			Vertical	0.041
31	Chillán Nuevo	36°40'	N20W	0.108
	(D.I.C.)	72°09'	N70E	0,067
			Vertical	0,026

[†] Values obtained from digitised and corrected accelerograms

[*] Accelerographs owned by
(DIC) Departemento de Ingenieria Civil, University of Chile
(C.CH.E.N) Chilean Nuclear Energy Commission (maintained by Department of Seismology and Geophysics, University of Chile)

[**] Value with instrumental correction

III. RECORD PROCESSING IN THE UNITED STATES

The records are processed according to the descriptions in AGRAM (Converse 1984). Briefly, the steps are as follows:

1. Digitizing of the film records at a commercial digitizing firm (IOM TOWILL in Santa Clara, California) on a trace-following, computer-controlled laser scanner. Unequal time spacing, at an average of 600 samples per second, is used. The records are divided into 10-second (10 cm) frames to fit the digitizer.

2. Butting the separately-digitized, 10-second frames together, using specially inserted vertical lines; each vertical line is digitized twice, once in each adjacent frame.

3. Preparation of uncorrected data by subtracting out the reference traces, subtracting the average value, and using the time marks for adjusting the X-coordinates. Plots of the uncorrected data are prepared.

4. The data are then passed through a correction algorithm that applies a high-frequency filter (50 Hz), instrument corrections, and decimation to 200 samples per second. A low-frequency high-pass Butterworth filter removes all periods longer than a predetermined period obtained from the data. This period is chosen after consideration of: (a) the strong-motion duration of the earthquake, indicated by the records, (b) the behavior of the displacements calculated from the accelerations at specific sites, and (c) the total length of the digitized records.

   Preliminary correction processing and integration for displacements indicate that there are significant ground motions at periods of three to four seconds, and a five-second filter shows no unrealistic content between four- and five-second periods. A long period limit of five seconds is chosen for this data. Plots of the corrected acceleration, velocity, and displacements for the three components of each recording are prepared.

5. Response spectra are calculated for periods up to the long-period limit. Linear plots of relative velocity response spectra, and the log-log tripartite plots of pseudo-velocity response are prepared.

6. Fourier amplitude spectra, calculated by FFT, are presented on linear axes and log-log axes.

IV. ORGANIZATION OF THE DATA PROCESSED IN THE UNITED STATES

Data processed in the U.S. fall into three categories:

a.) Main shock data of 3 March 1985 (7 stations).
b.) One hour aftershock of 3 March 1985 (2 stations).
c.) One important aftershock (1 station).

A general matrix of the processed data is provided in Table 4. The plots in accordance with the matrix follow.

REFERENCES

Algermission, S.T., 1985, Preliminary report of investigations of the Central Chile earthquake of March 3, 1985: U.S. Geological Survey Open-File Report 85-542.

Converse, A.M., 1984, AGRAM: A series of computer programs for processing digitized strong-motion accelerograms. U.S. Geological Survey Open-File Report 84-525.

Saragoni, R.,, Gonzalez, P., and Fresard, M., 1985, Analysis de Los Acelerograms del Terremoto del 3 De Marzo de 1985, Publicacion SES I 4/1985 (199), December 1985.

TABLE 3

STRONG MOTION ACCELEROGRAPH STATION LIST (1985)

Name	Number of Instr.	Coordinates	Site Geology	Structure Type/Size	Instrument Location	Model	Operated/ Maintained by
San Felipe	1	32.75 S 70.73 W	Alluvium (Tertiary, Quaternary)	1 story building	Ground level	SMA-1	Civil Eng. Dept. (Univ. of Chile)
Quintero (Central Ventanas II) (National Electric Distribution Co.)	2	32.75 S 71.49 W	Loose Sand (Pliocene)	a) Thermoelectric Plant, 6 story Boiler Building (60 meters high)	Ground Level	SMA-1	Geophysics Dept. (Univ. of Chile)
				b) " " "	Top of the structure	SMA-1	" " "
Llay Llay	1	32.83 S 70.98 W	Soft alluvium (Tertiary, Quaternary)	1 story building	Ground Level	SMA-1	Civil Eng. Dept. (Univ. of Chile)
Vina del Mar	1	33.02 S 71.57 W	Sandstone & Volcanic Rock	10 story building	Basement	SMA-1	" " "
Valparaiso	2	33.03 S 71.62 W	a) Volcanic rock (Precambrian/ Paleozoic)	a) Univ. of Santa Maria Campus 1 story building	Ground Level	SMA-1	" " "
			b) Fill	b) Ave du Argentina	Basement	SMA-1	" " "
Peldehue	1	33.14 S 70.68 W	Volcanic Rock and Alluvium (Tertiary/ Quaternary)	1 story building	Ground Level	DG-2 (C-11)	" " "
Vallenar	1	28.58 S 70.77	Firm Gravel (Tertiary/ Quaternary)	1 story building	Ground Level	DG-1	Geophysics Dept. (Univ. of Chile)

TABLE 3 (CONTINUED)

Name	Number of Instr.	Coordinates	Site Geology	Structure Type/Size	Instrument Location	Model	Operated/ Maintained by
La Serena	1	29.90 S 71.29 W	Soft Alluvium (Tertiary/ Quaternary)	2 story building	Ground Level	DG-2	Geophysics Dept. (Univ. of Chile)
Illapel	1	31.63 S 71.17 W	Soft Alluvium (Tertiary/ Quaternary)	1 story building	Basement	SMA-1	Civil Eng. Dept. (Univ. of Chile)
Los Vilos	1	31.92 S 71.50 W	Sedimentary Rock (Middle to Upper Triassic)	1 story building	Ground Level	SMA-1	" " "
La Ligua	1	37.45 S 71.25 W	Alluvium (Tertiary/ Quaternary)	" " " " " "	" "	SMA-1 (2g capacity)	" " "
Papuda	1	32.51 S 71.45 W	Granite (Jurassic)	" " "	" "	SMA-1 (2g capacity)	" "
Zapallar	1	32.57 S 71.47 W	" "	" " "	" "	SMA-1	Geophysics Dept. (Univ. of Chile)
Santiago	2	1) 33.47 S 2) National Electric Co. Bldg.	Firm Gravel (Tertiary/ Quaternary)	3 story building	Basement	1) a) USGS C-12 b) SMA-1 2) Japanese Instr.	Civil Eng. Dept. (Univ. of Chile)
Llolleo	1	32.63 S 71.63 W	Sandstone & volcanic rock (Paleozoic)	1 story building	Basement	SMA-1	" " "

TABLE 3 (CONTINUED)

Name	Number of Instr.	Coordinates	Site Geology	Structure Type/Size	Instrument Location	Model	Operated/ Maintained by
Melipilla	1	33.68 S 71.22 W	Granitic rocks (Tertiary/ Quaternary)	1 story building	Ground Level	SMA-1	Geophysics Dept. (Univ. of Chile)
Rapel (Electric Co.)	1	34.03 S 71.58 W	Marine & Continental Sediments (Paleozoic)	Tunnel	" "	RFT-250	" " "
Rancagua (COYA)	1	34.20 S 70.53 W	Soft Alluvium (Tertiary/ Quaternary)	Tunnel	" "	RFT-250	" " "
El Teniente (Copper Company)	1	34.21 S 70.54 W	Riolitic Volcanic rock Andesitic (Upper Cretaceous)	1 story building	" "	RFT-250	" "
San Fernando	1	34.60 S 71.00 W	Alluvium (Tertiary/ Quaternary)	1 story building	" "	SMA-1	Civil Eng. Dept. (Univ. of Chile)
Pichilemu	1	34.38 S 72.02 W	Slates, sandstone, limestone (Precambrian/ Paleozoic)	1 story building	" "	SMA-1	Geophysics Dept. (Univ. of Chile)
Santa Cruz	1	34.65 S 71.68 W	Alluvium (Tertiary/ Quaternary)	1 story building	" "	SMA-1	" " "
Iloca	1	34.92 S 72.22 W	Sandstone, alluvium (Tertiary/ Quaternary)	1 story building	" "	SMA-1	" " "

TBALE 3 (CONTINUED)

Name	Number of Instr.	Coordinates	Site Geology	Structure Type/Size	Instrument Location	Model	Operated/ Maintained by
Hualane	1	34.97 S 71.82 W	Alluvium (Tertiary/ Quaternary)	" " "	" "	SMA-1	" " "
Curico	1	34.98 S 71.23 W	Alluvium (Quaternary)	" " "	" "	DG-2	Civil Eng. Dept. (Univ. of Chile)
Constitucion	1	35.20 S 72.32 W		2 story building			Geophysics Dept. (Univ. of Chile)
Talca	1	35.43 S 70.67 W	Soft alluvium (Quaternary)	1 story building	Ground Level	SMA-1	Civil Eng. Dept. (Univ. of Chile)
Linares	1	35.82 S 71.72 W	Alluvium (Quaternary)	2 story building	Ground Level	SMA-1	" " "
Chillan	2	36.00 S 72.22 W	Alluvium (Quaternary)	2 story building a) Viejo Instituto b) Nuevo Escale	Ground Level	SMA-1	" " "
Viejo	1	36.60 S 72.10 W	Soft alluvium (Quaternary)	2 story building	Basement	SMA-1	" " "
Concepcion (Huachipato)	1	36.73 S 73.10 W	Sandstone and lutites (Paleozoic)	1 story building	Ground Level	SMA-1 DG-2*	" " "
Concepcion	1	36.8 S 73.0 W	Sands	1 story building	Basement	SMA-1 DG-2*	" " "
Concepcion	1	36.8 S 73.0 W	Granitic rock	4 story building	Ground Level	SMA-1 DG-2*	" " "

TABLE 3 (CONTINUED)

Name	Number of Instr.	Coordinates	Site Geology	Structure Type/Size	Instrument Location	Model	Operated/ Maintained by
Temuco	1	38.73 S 72.61 W	Consolidated alluvium (Eocene, Miocene)	1 story building	Ground Level	DG-2	" " "
Valdivia	1	39.79 S 73.27 W	Alluvium and sand (Quaternary)	1 story building	Ground Level	DG-1	" " "
Osorno	1	40.07 S 73.14 W	Alluvium and sand (Quaternary)	1 story building	Basement	DG-2	" " "
Puerto Mont	1	41.48 S 72.93 W	Alluvium (Quaternary)	2 story building	Ground Level	DG-2	" " "
Arica		18.50 S 70.20 W	Volcanic rock (miocene, pliocene)	2 story building	Basement (Univ. of Chile)	SMA-1	Civil Eng. Dept.
Iquique		20.20 S 70.10 W	Alluvium (jurassic)	2 story building	Basement	SMA-1	" " "
Tocopilla		22.10 S 70.22 W	Alluvium (jurassic)	1 story building	Ground level	DG-2	Geophysics Dept. (Univ. of Chile)
Calama		22.46 S 68.92 W	Sedimentary rock (miocene, pliocene)	1 story building	Ground level	DG-2	" " "
Antofagasta		23.71 S 70.42 W	Andesitic volcanic rock (jurassic)	1 story building	Ground level	DG-1	" " "
Taltal		25.24 S 70.30 W	Andesitic volcanic rock (jurassic)	2 story building	Basement	DG-2	" " "
Copiapo		27.36 S 70.35 W	Alluvium (tertiary, quaternary)	Mine tunnel	Ground level	DG-1	" " "

TABLE 4
MATRIX OF PLOTS OF DATA PROCESSED IN THE U.S.

MAIN SHOCK OF 3 MARCH 1985

Station	Uncorrected Accelerograms	Corrected A, V, D	Velocity Response Spectra	Tripartite Response Spectra	Fourier Amplitude Spectrum of Acceleration
	pages				
CHILLAN INST.	U-1				
80 degrees		C-1	V-1	T-1	F01-F02
UP		C-2	V-2	T-2	F03-F04
350 degrees		C-3	V-3	T-3	F05-F06
PAPUDO	U-2				
50 degrees		C-4	V-4	T-4	F07-F08
UP		C-5	V-5	T-5	F09-F10
140 degrees		C-6	V-6	T-6	F11-F12
TALCA	U-3				
280 degrees		C-7	V-7	T-7	F13-F14
UP		C-8	V-8	T-8	F15-F16
10 degrees		C-9	V-9	T-9	F17-F18
ILLAPEL	U-4				
360 degrees		C-10	V-10	T-10	F19-F20
UP		C-11	V-11	T-11	F21-F22
90 degrees		C-12	V-12	T-12	F23-F24
LA LIGUA	U-5				
360 degrees		C-13	V-13	T-13	F25-F26
UP		C-14	V-14	T-14	F27-F28
90 degrees	(*)	----	----	----	-------
LLAY LLAY	U-6				
360 degrees		C-15	V-15	T-15	F29-F30
UP		C-16	V-16	T-16	F31-F32
90 degrees		C-17	V-17	T-17	F33-F34
SAN FELIPE	U-7				
360 degrees		C-18	V-18	T-20	F35-F36
UP		C-19	V-19	T-21	F37-F38
90 degrees		C-20	V-20	T-20	F39-F40

* Note: La Ligua (90°) not available.

TABLE 4
MATRIX OF PLOTS OF DATA PROCESSED IN THE U.S.
(continued)

ONE HOUR AFTERSHOCK OF 3 MARCH 1985

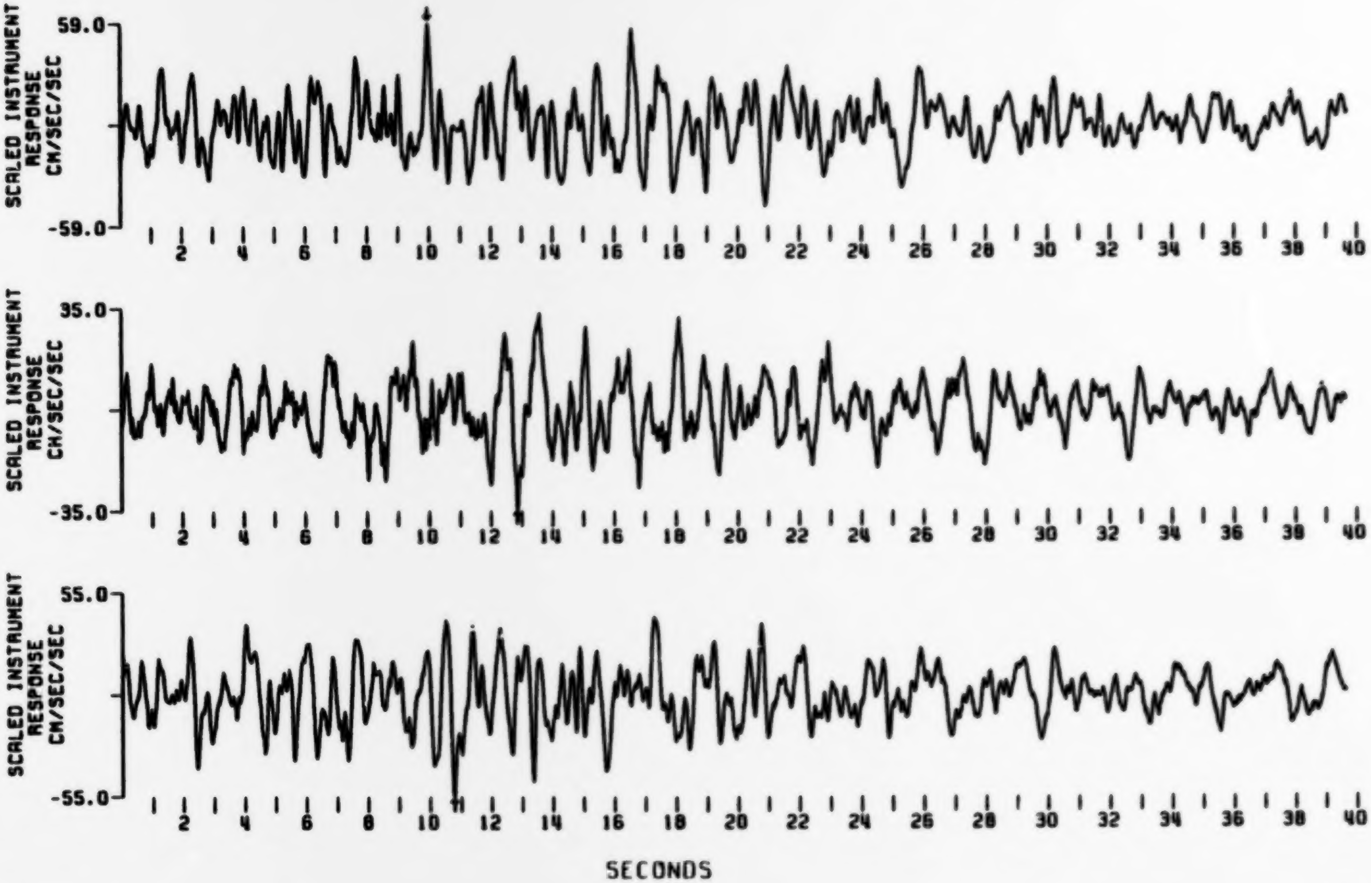
Station	Uncorrected Accelerograms	Corrected A, V, D	Velocity Response Spectra	Tripartite Response Spectra	Fourier Amplitude Spectrum of Acceleration
LLOLLEO	U-8				
100 degrees		C-21	V-21	T-21	F41-F42
UP		C-22	V-22	T-22	F43-F44
10 degrees		C-23	V-23	T-23	F45-F46
VINA DEL MAR	U-9				
290 degrees		C-24	V-24	T-24	F47-F48
UP		C-25	V-25	T-25	F49-F50
200 degrees		C-26	V-26	T-26	F51-F52
VALPARAISO (UTFSM)*	U-10				
160 degrees		C-27	V-27	T-27	F53-F54
UP		C-28	V-28	T-28	F55-F56
070 degrees		C-29	V-29	T-29	F57-F58

ANOTHER AFTERSHOCK: April 8, 1985

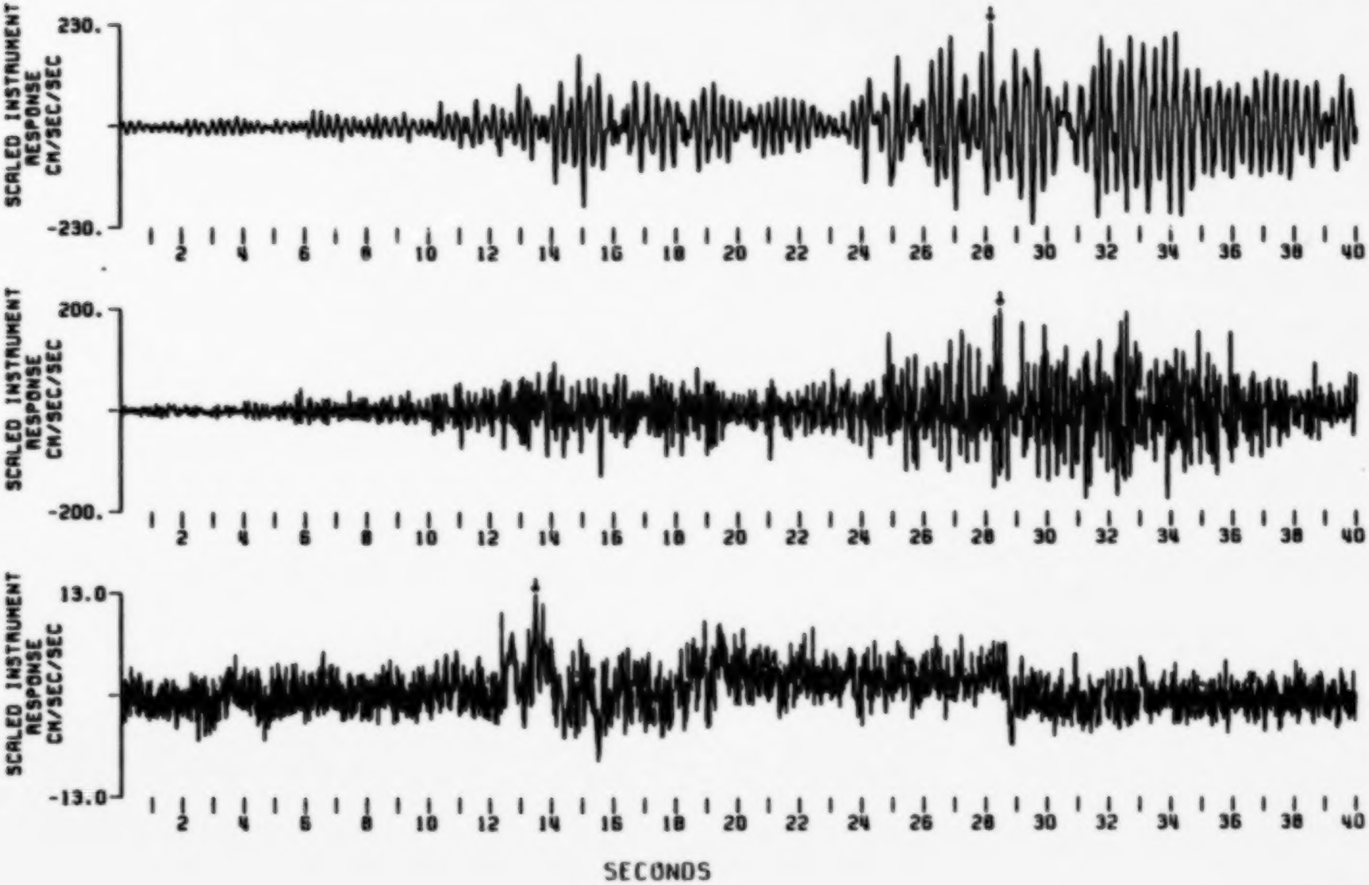
Station	Uncorrected Accelerograms	Corrected A, V, D	Velocity Response Spectra	Tripartite Response Spectra	Fourier Amplitude Spectrum of Acceleration
LLOLLEO	U-11				
100 degrees		C-30	V-30	T-30	F59-F60
UP		C-31	V-31	T-31	F61-F62
10 degrees		C-32	V-32	T-32	F63-F64

* Denoted as UFSM (#3 in Table 2).

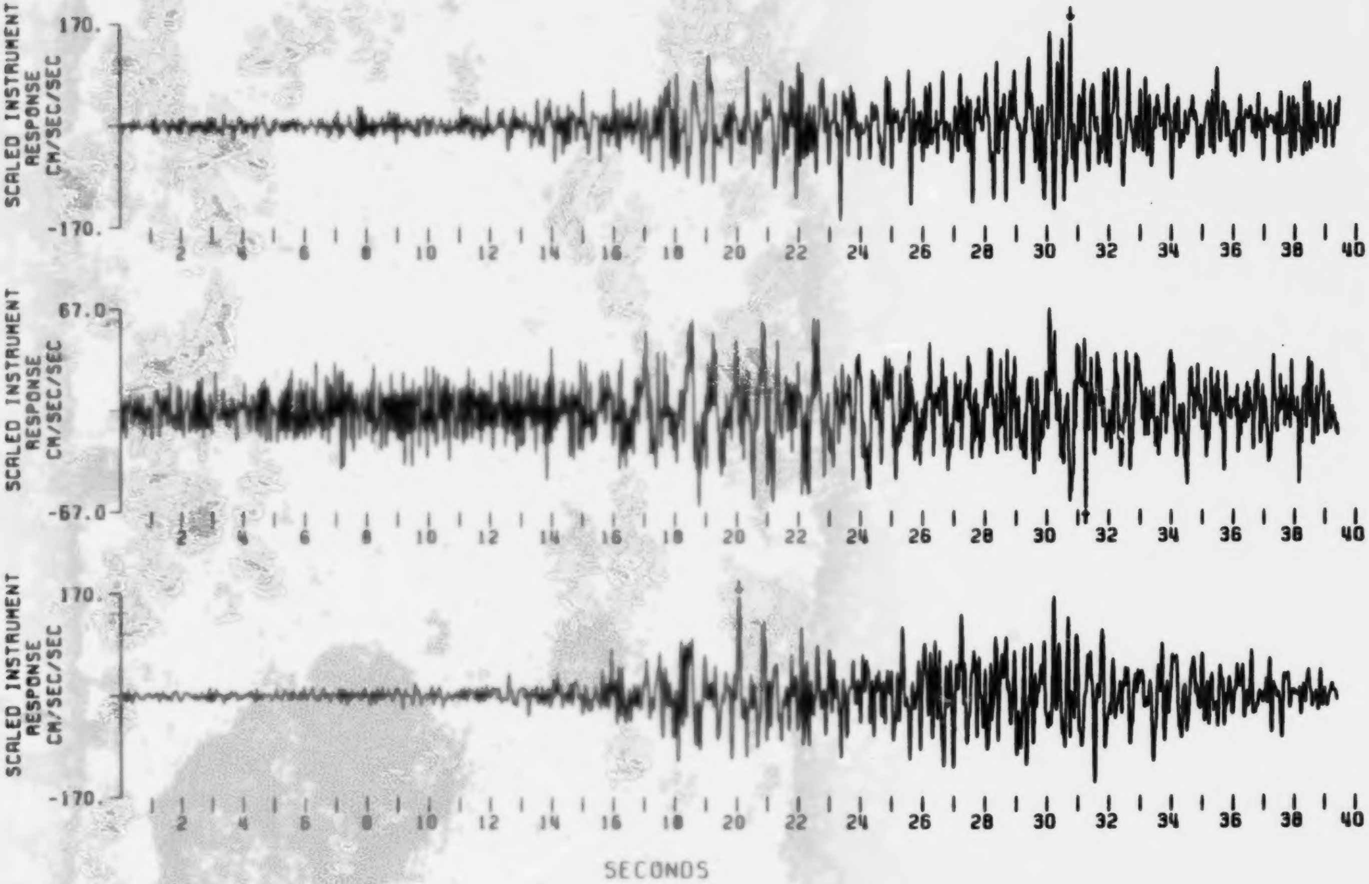
UNCORRECTED ACCELEROGRAM
CHILLAN INSTITUTE
080 DEGREES, UP, 350 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): 58.48 -34.32 -54.77



UNCORRECTED ACCELEROGRAM
PAPUDO
050 DEGREES, UP, 140 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): 228.16 197.73 12.78



UNCORRECTED ACCELEROGRAM
TALCA
280 DEGREES, UP, 010 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): 166.13 -66.29 162.38



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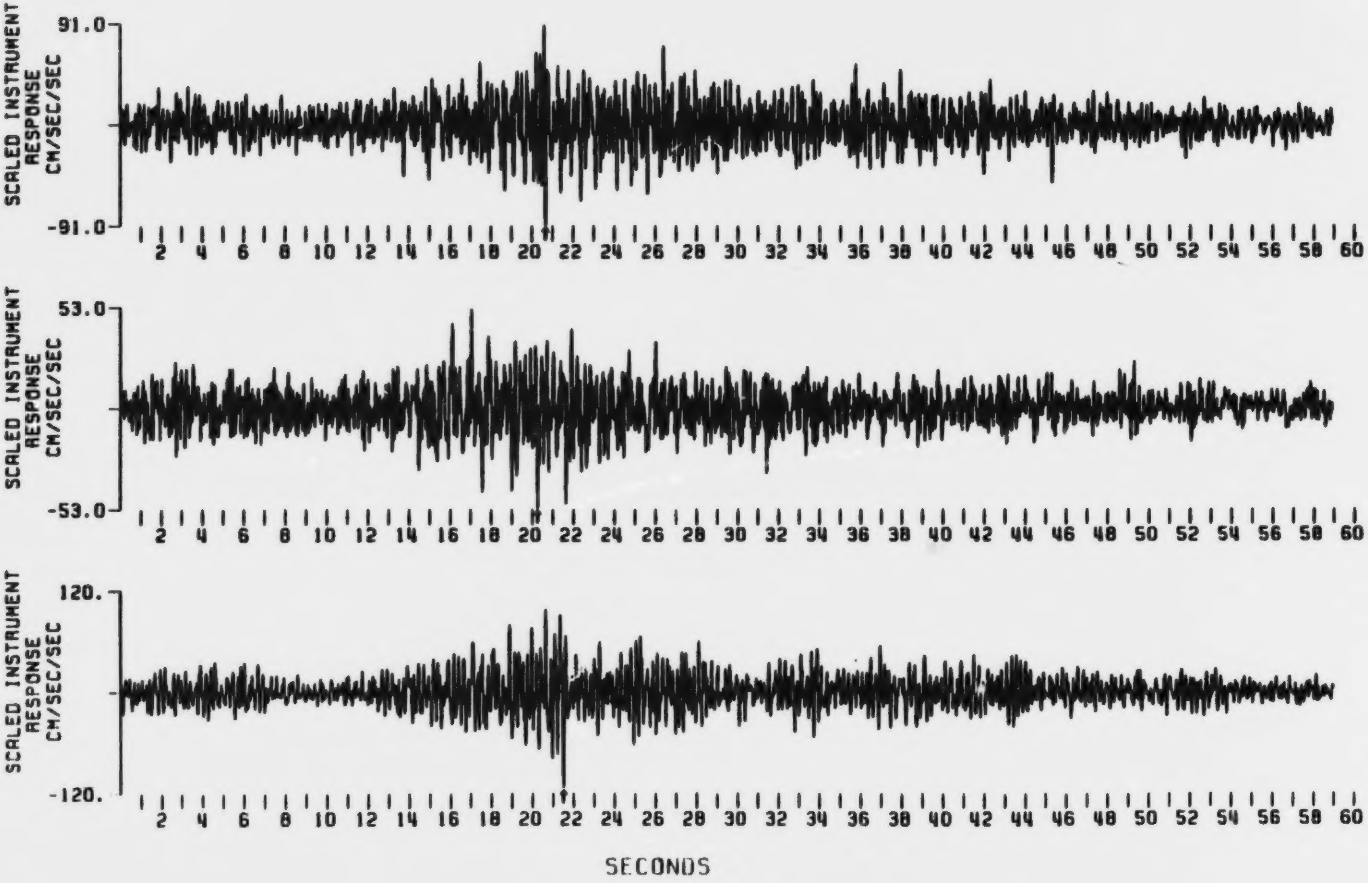
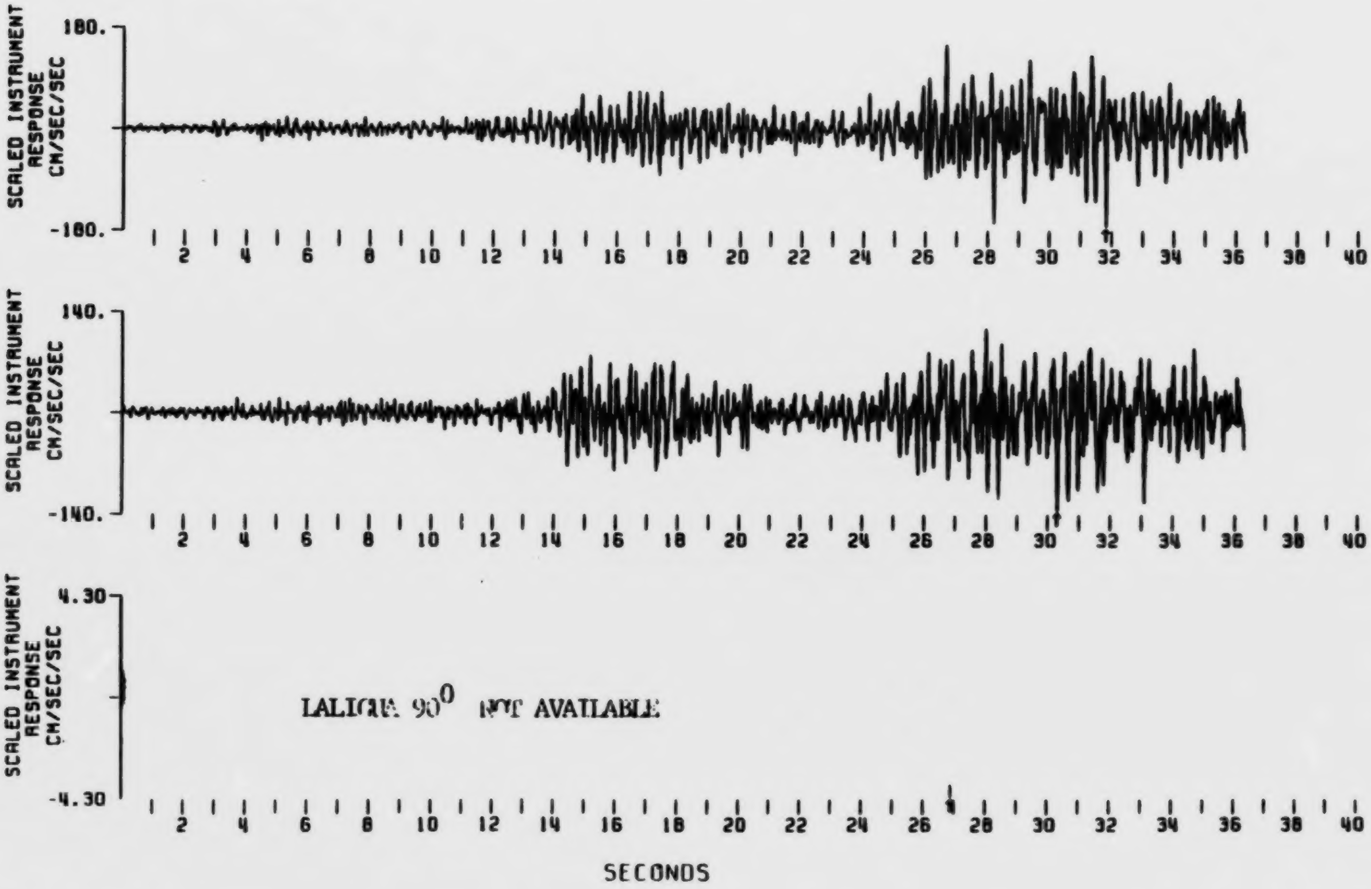
UNCORRECTED ACCELEROGRAM
ILLAPEL
360 DEGREES, UP, 90 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): -90.27 -52.27 -114.34

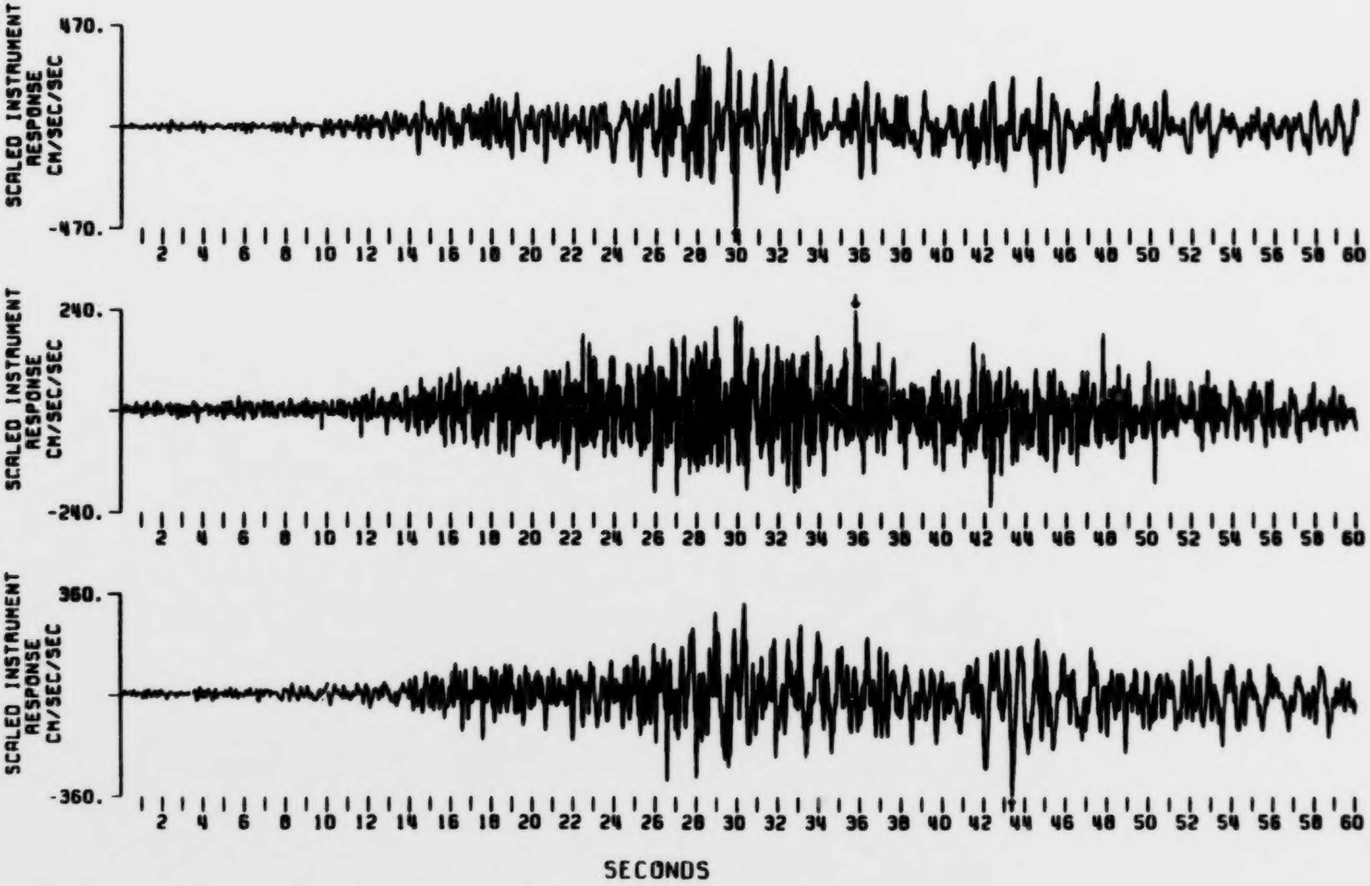


UNCORRECTED ACCELEROGRAM
LALIGUA
360 DEGREES, UP, 90 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): -172.50 -134.99 -4.22

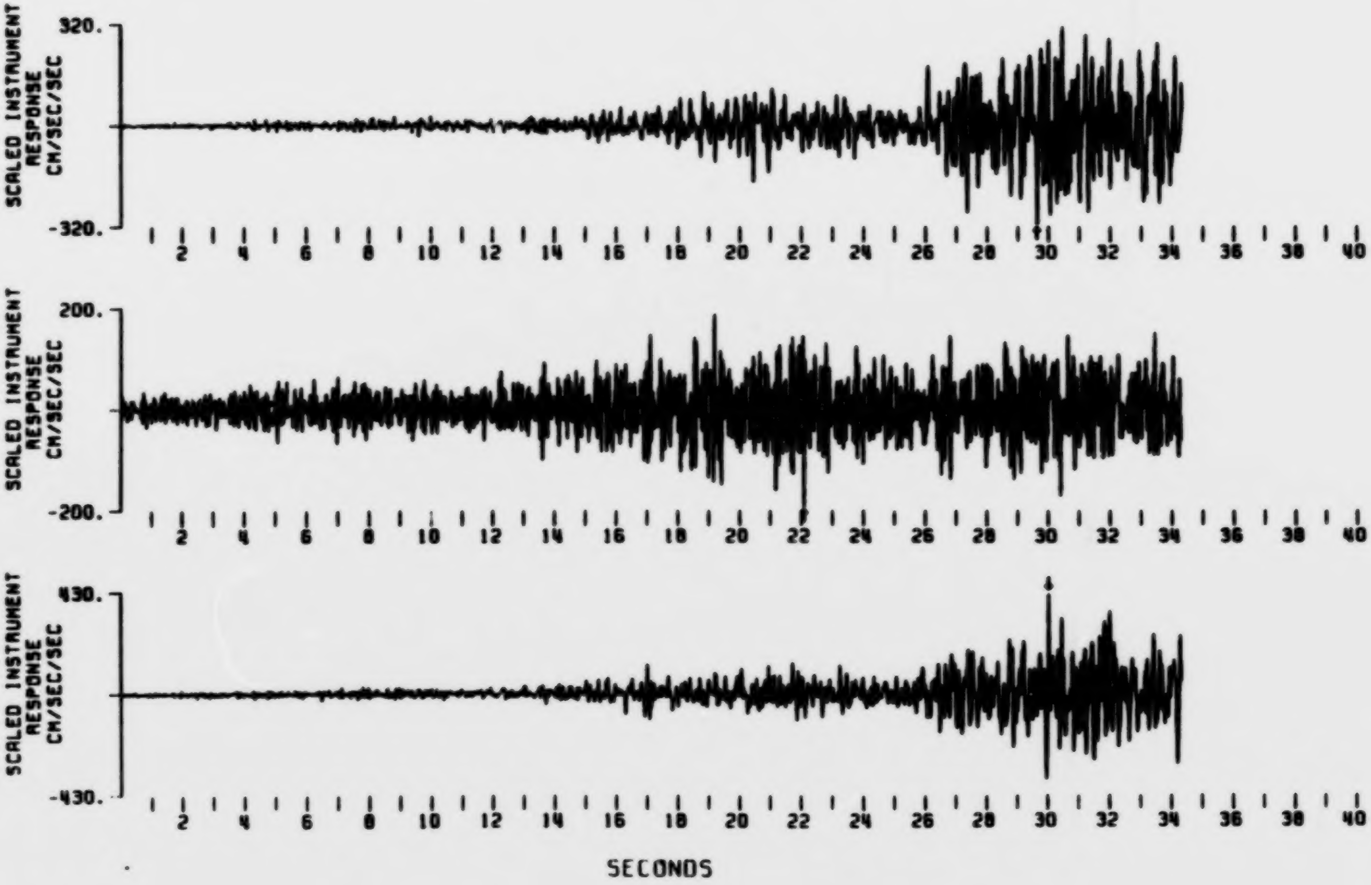


LALIGUA 90° NOT AVAILABLE

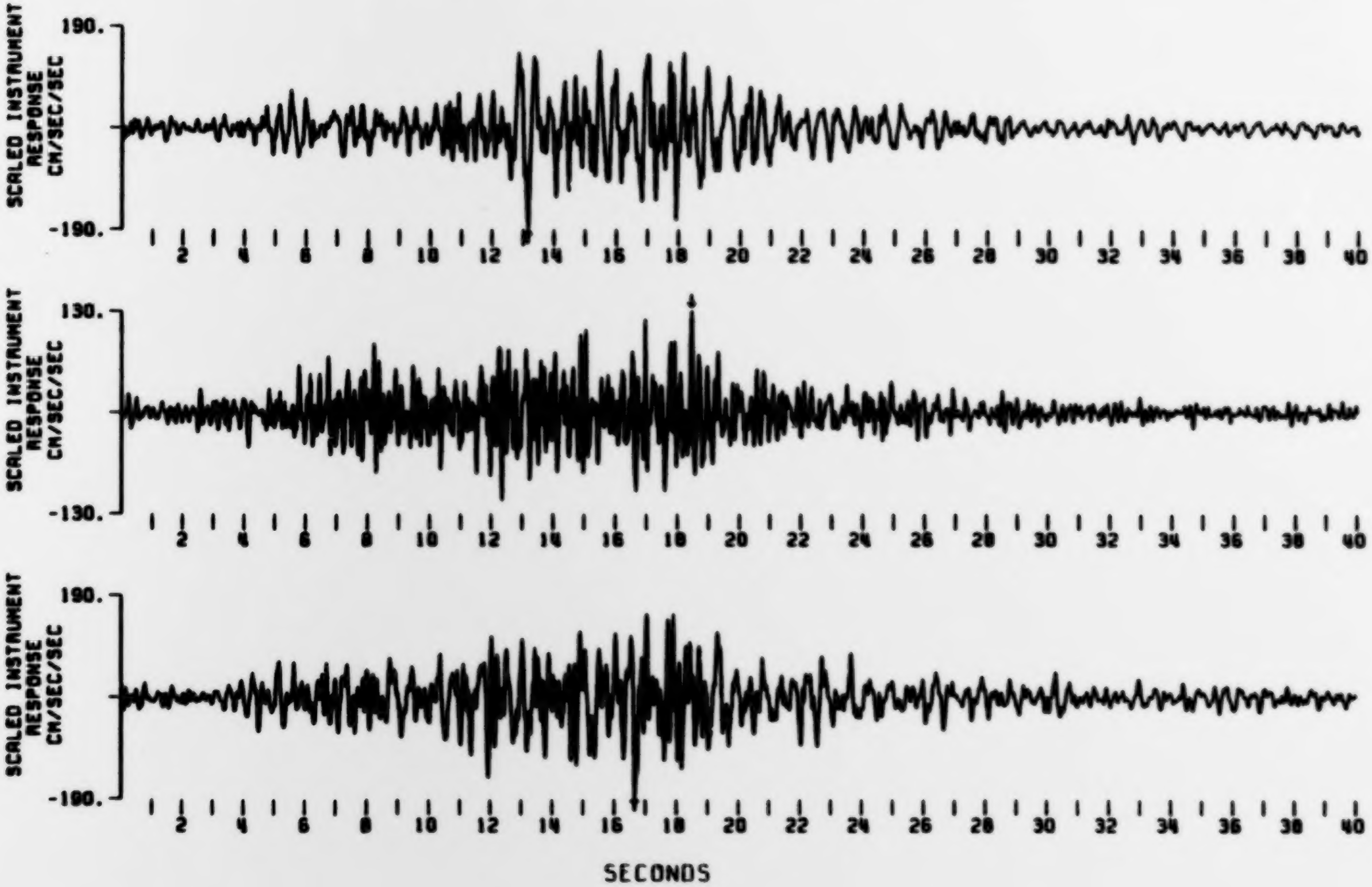
UNCORRECTED ACCELEROGRAM
LLAYLLAY
360 DEGREES, UP, 90 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): -460.78 239.07 -358.89



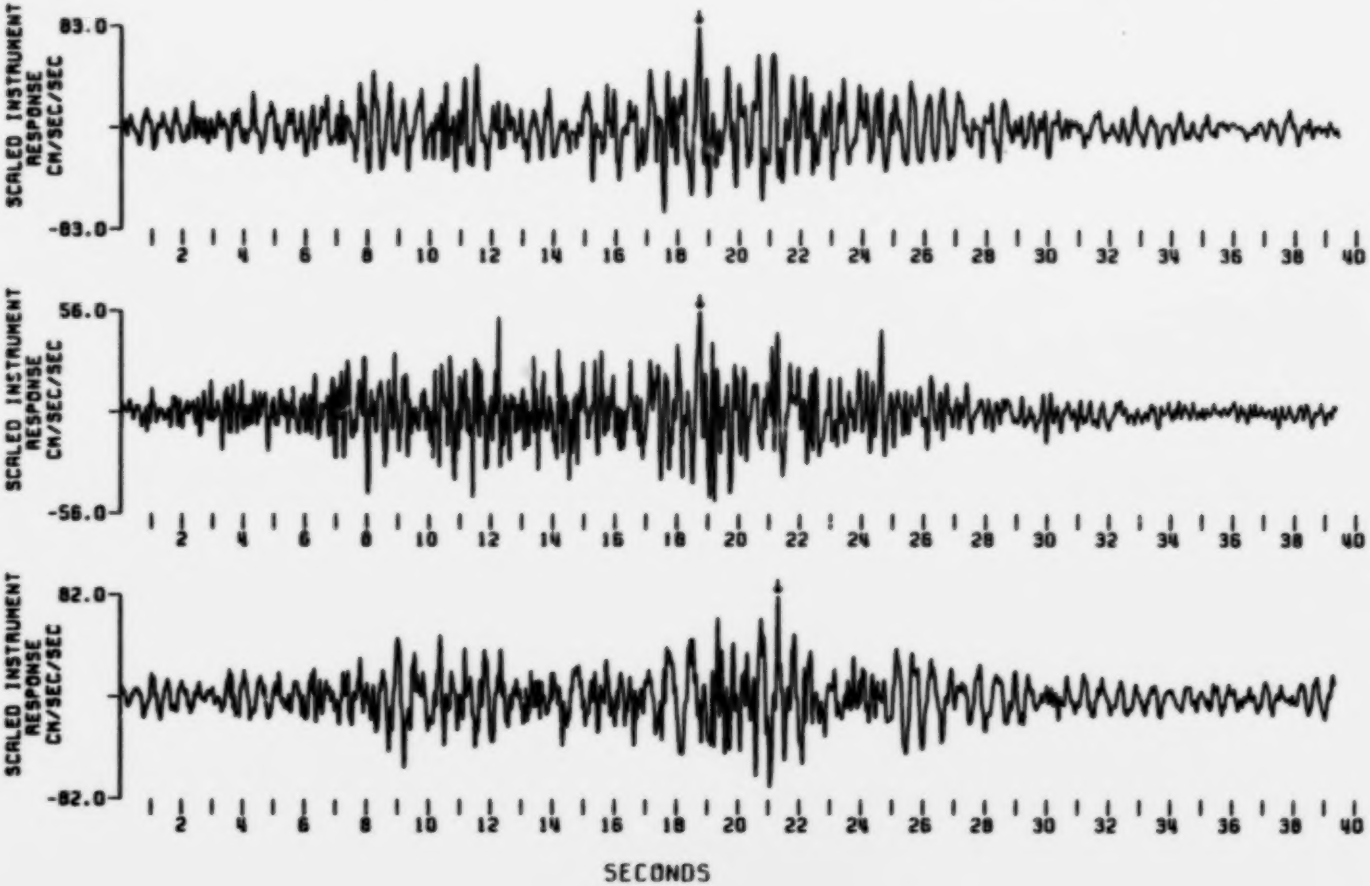
UNCORRECTED ACCELEROGRAM
SAN FELIPE
360 DEGREES, UP, 90 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC):   -313.94   -193.82   421.97



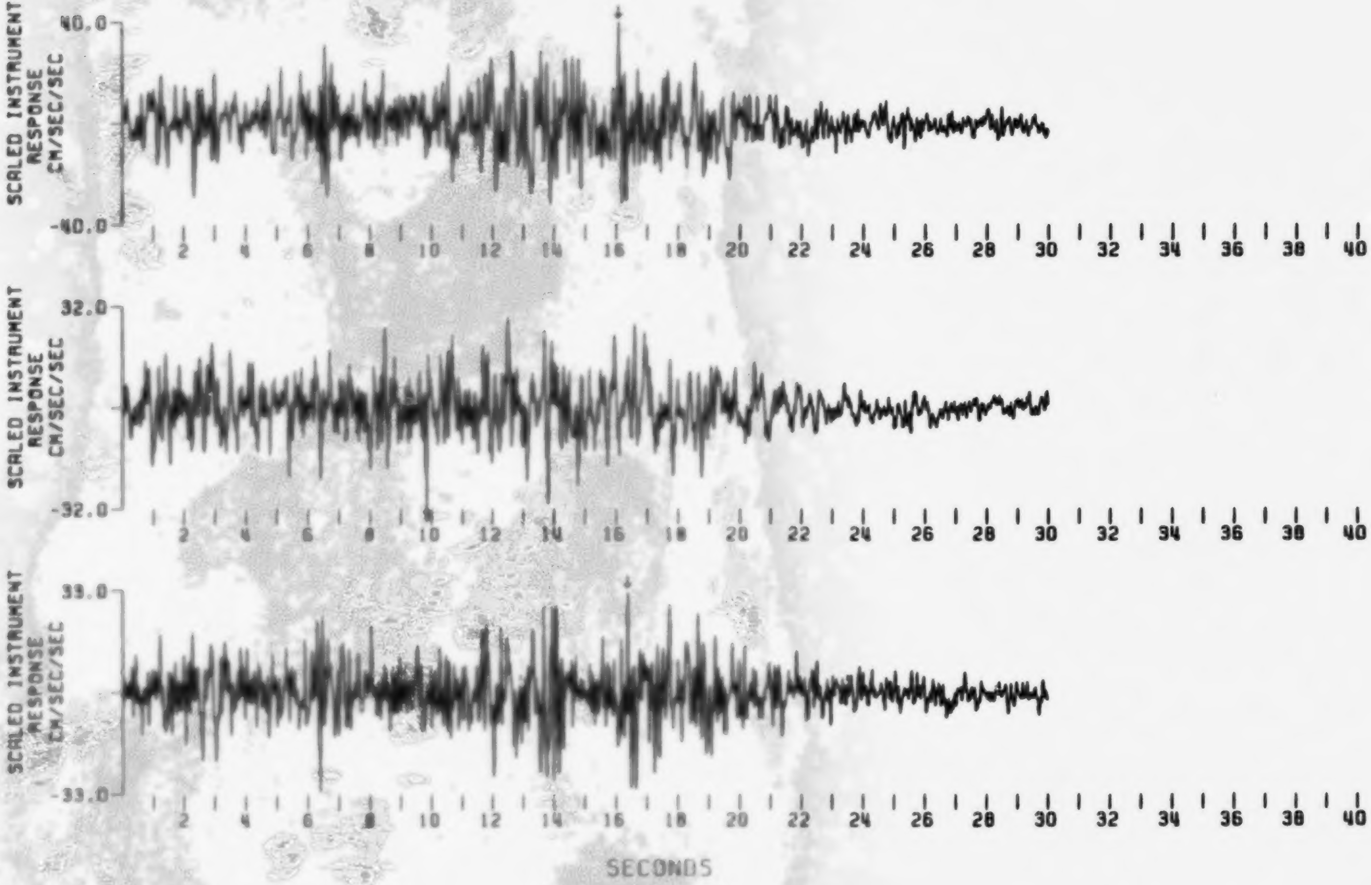
UNCORRECTED ACCELEROGRAM
LLOLLEO
100 DEGREES, UP, 010 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
PEAK VALUES(CM/SEC/SEC): -186.88 129.83 -182.84



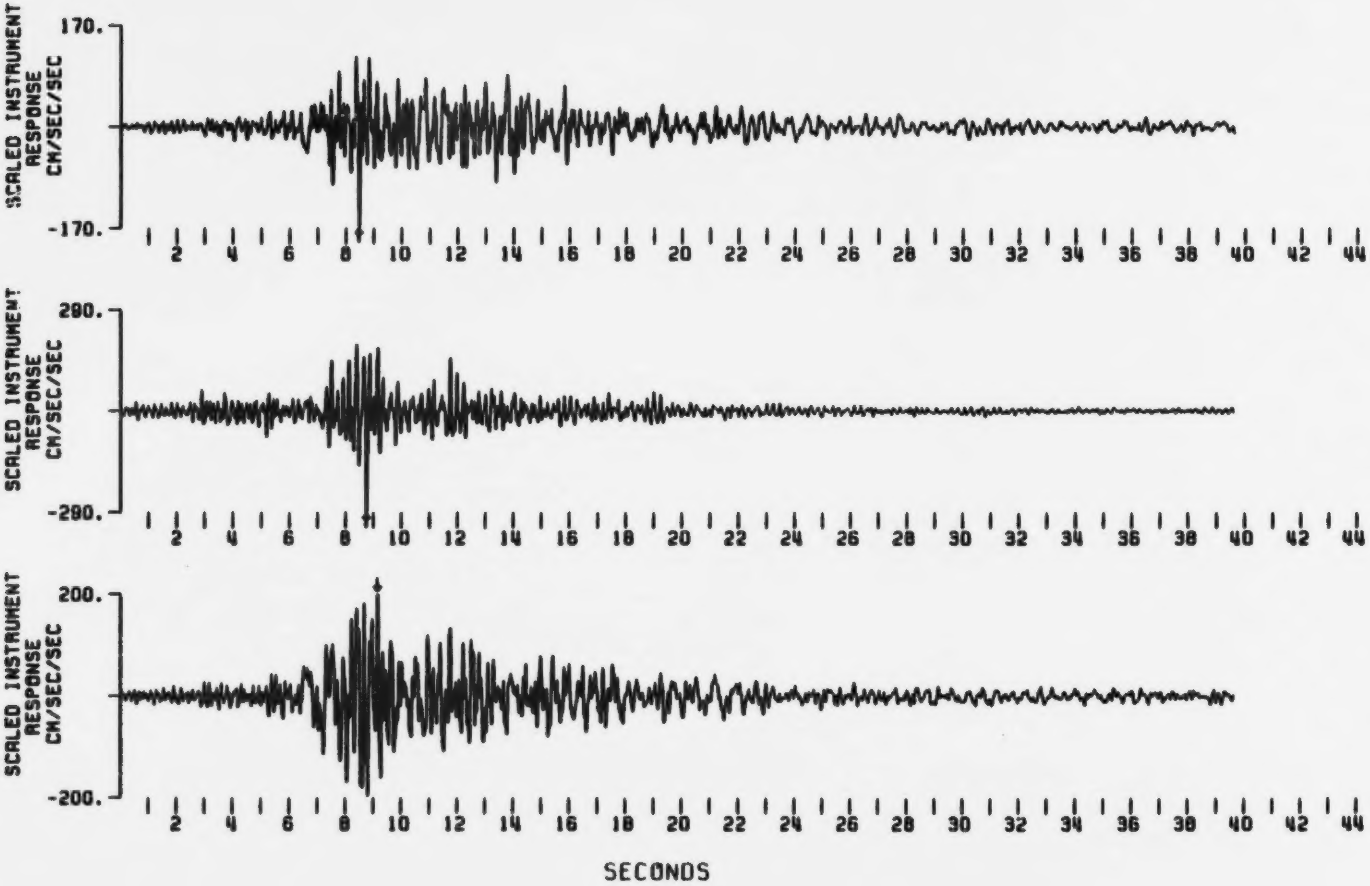
UNCORRECTED ACCELEROGRAM
VINA DEL MAR
290 DEGREES, UP, 200 DEGREES
EARTHQUAKE OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR)
PEAK VALUES(CM/SEC/SEC): 82.26 55.61 81.15



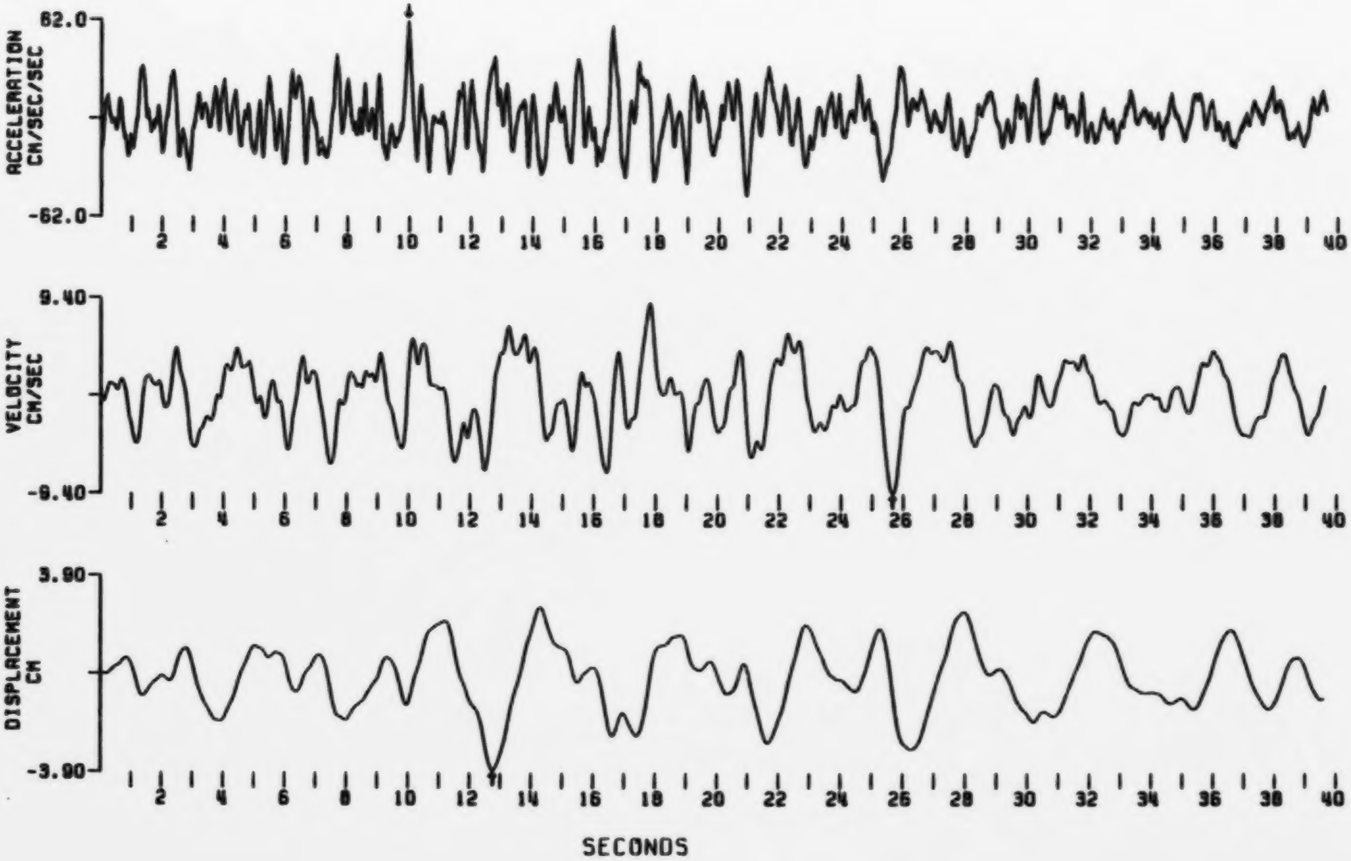
UNCORRECTED ACCELEROGRAM
VALPARAISO, U.T.F.S.M.
160 DEGREES, UP, 070 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
PEAK VALUES(CM/SEC/SEC): 39.48 -31.16 32.38



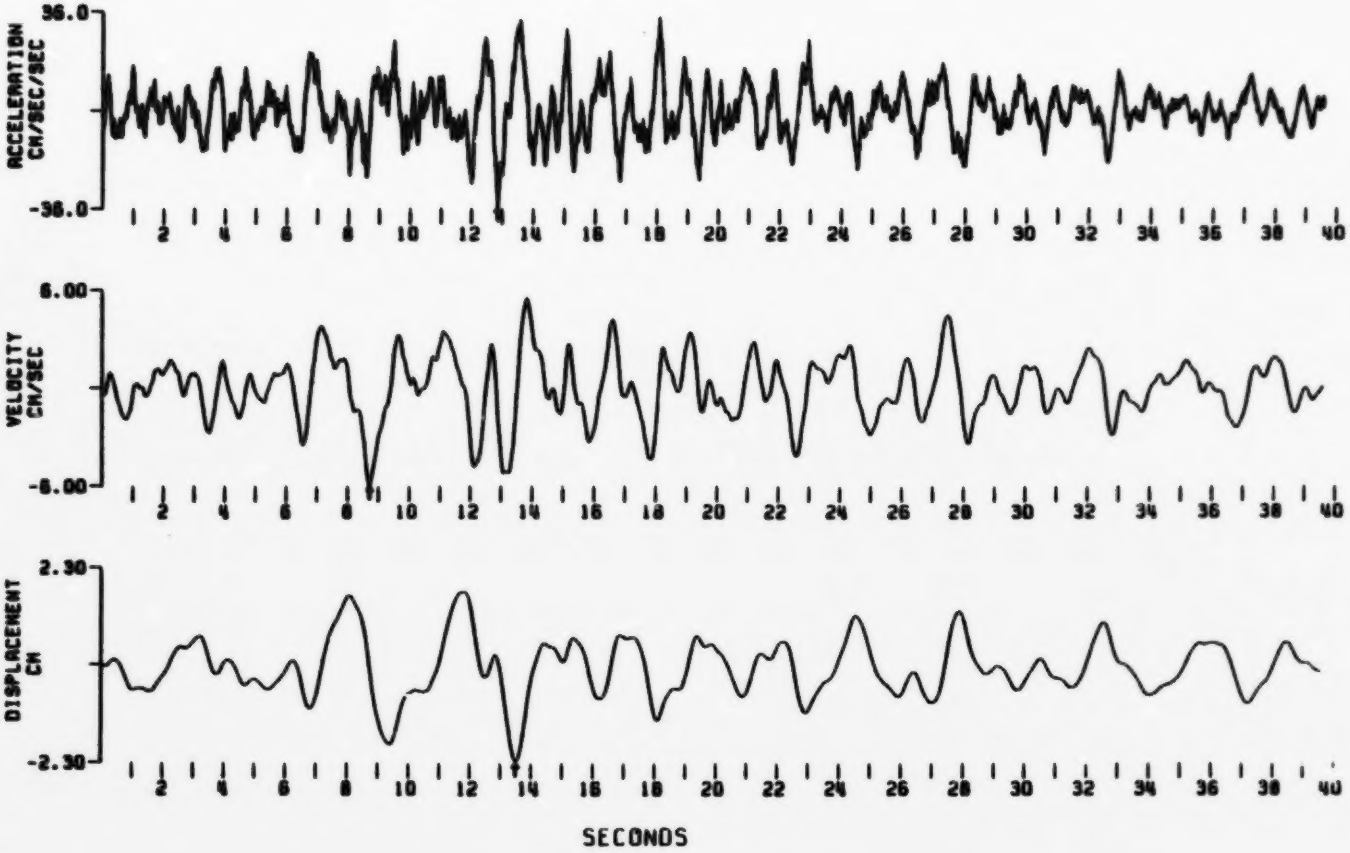
UNCORRECTED ACCELEROGRAM
LLOLLEO
100 DEGREES, UP, 010 DEGREES
EARTHQUAKE OF APRIL 8, 1985
PEAK VALUES(CM/SEC/SEC): -167.68 -288.62 197.70



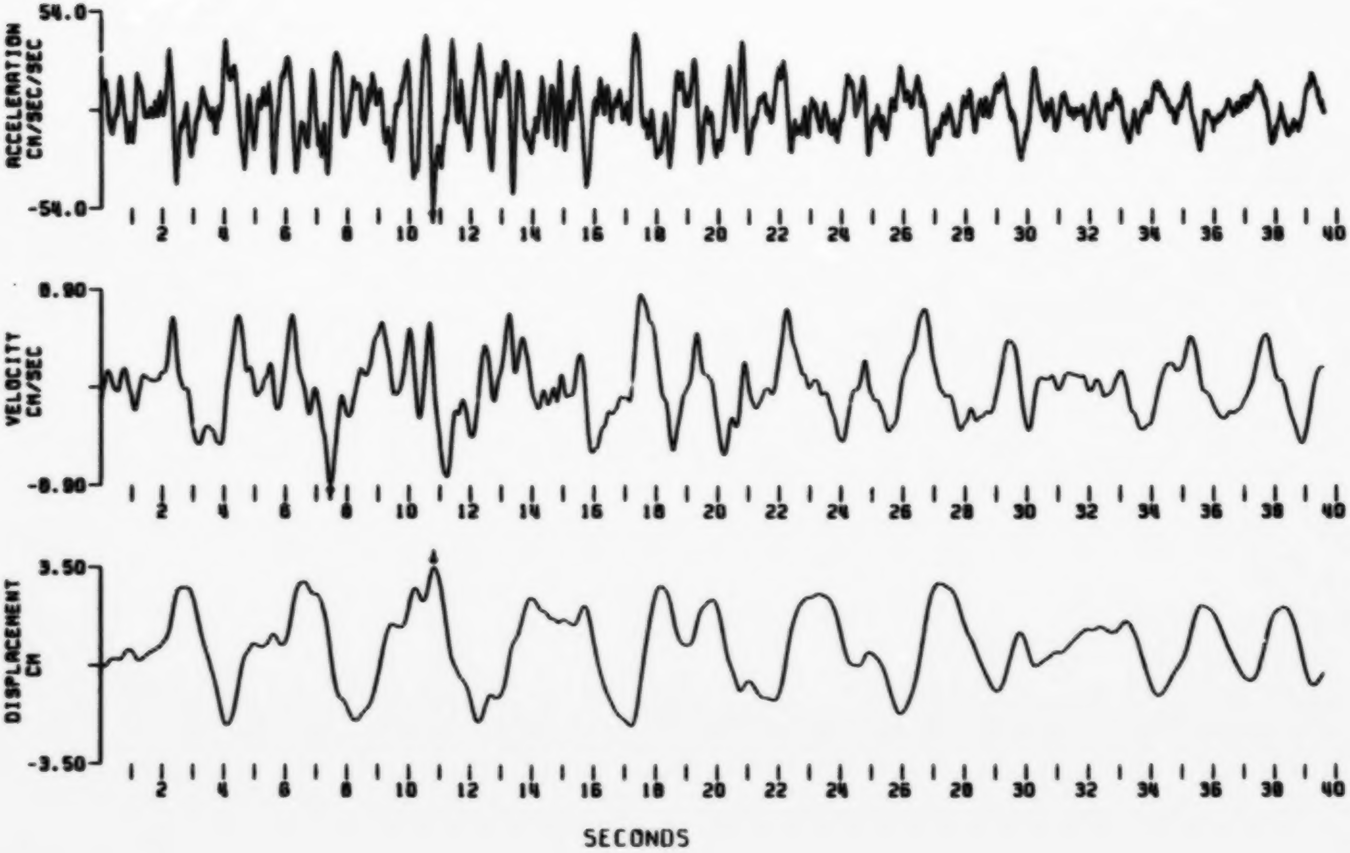
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
CHILLAN INSTITUTE
080 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT 0.2 HZ, ORDER 4
PEAK VALUES: ACCEL=61.02 CM/SEC/SEC, VELOCITY=-9.35 CM/SEC, DISPL=-3.80 CM



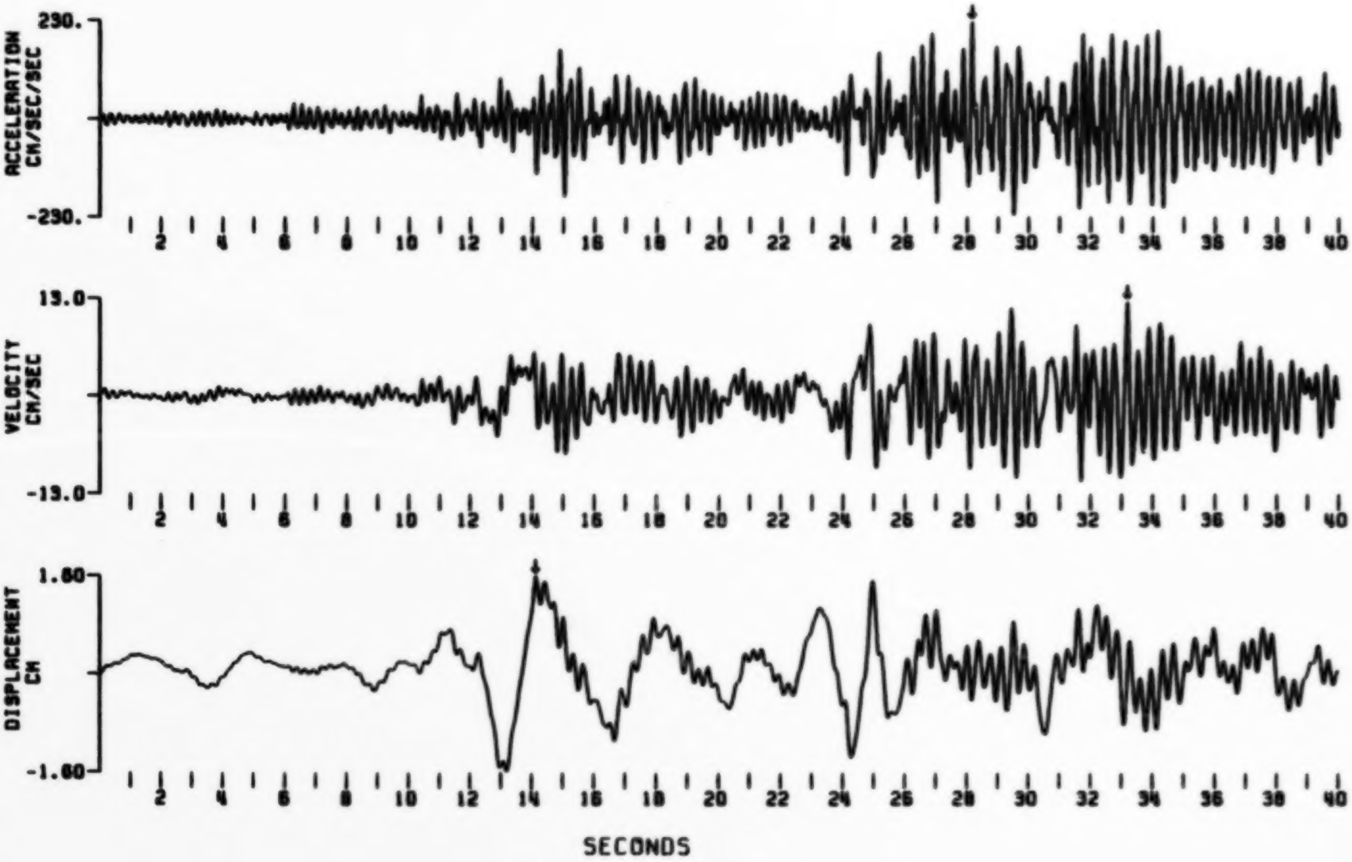
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
CHILLAN INSTITUTE
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT 0.2 HZ, ORDER 4
PEAK VALUES: ACCEL=-35.09 CM/SEC/SEC, VELOCITY=-5.91 CM/SEC, DISPL=-2.26 CM



CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
CHILLAN INSTITUTE
350 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT 0.2 HZ, ORDER 4
PEAK VALUES: ACCEL=-53.81 CM/SEC/SEC, VELOCITY=-8.81 CM/SEC, DISPL=3.49 CM



CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
PAPUDO
050 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
PEAK VALUES: ACCEL=226.43 CM/SEC/SEC, VELOCITY=12.41 CM/SEC, DISPL=1.59 CM



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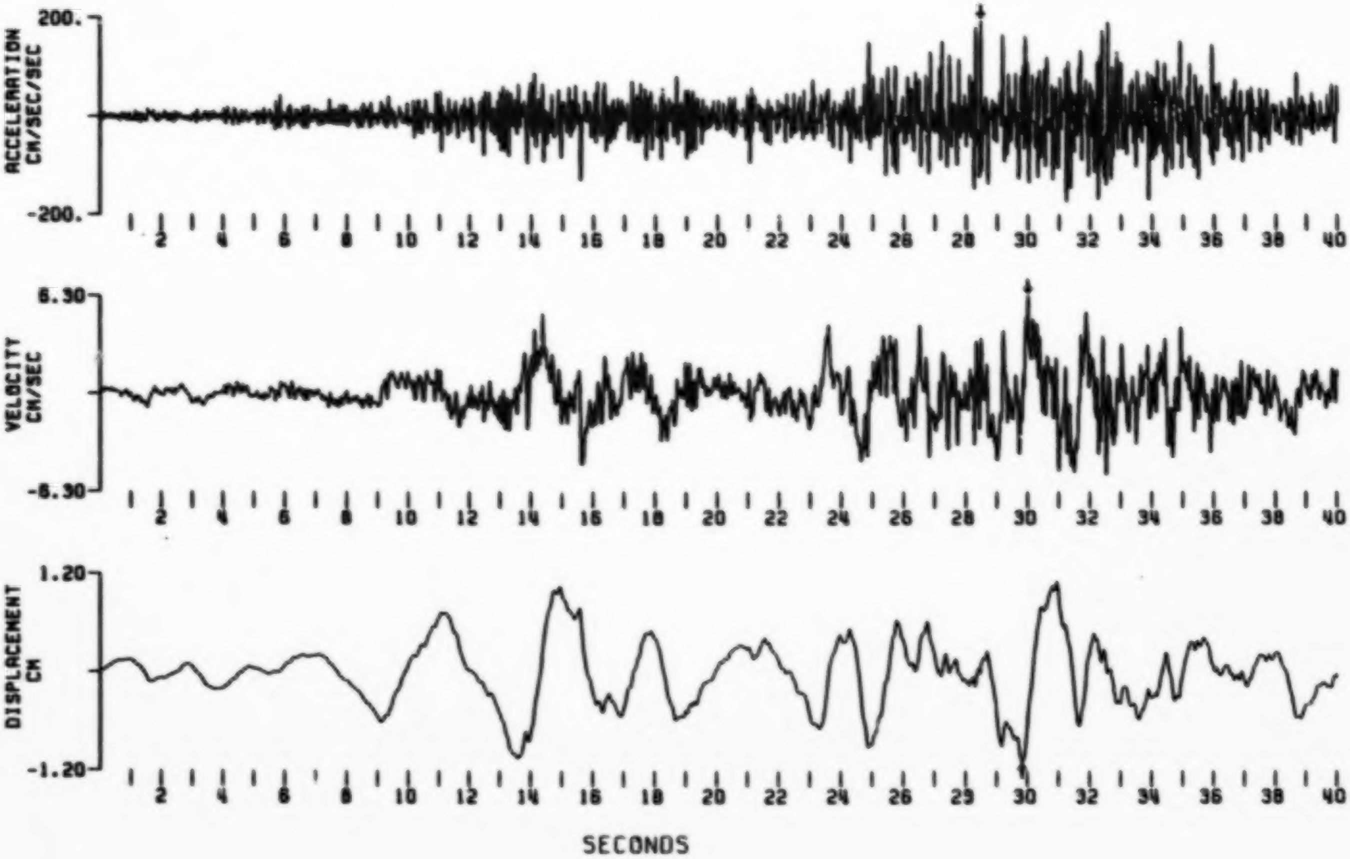
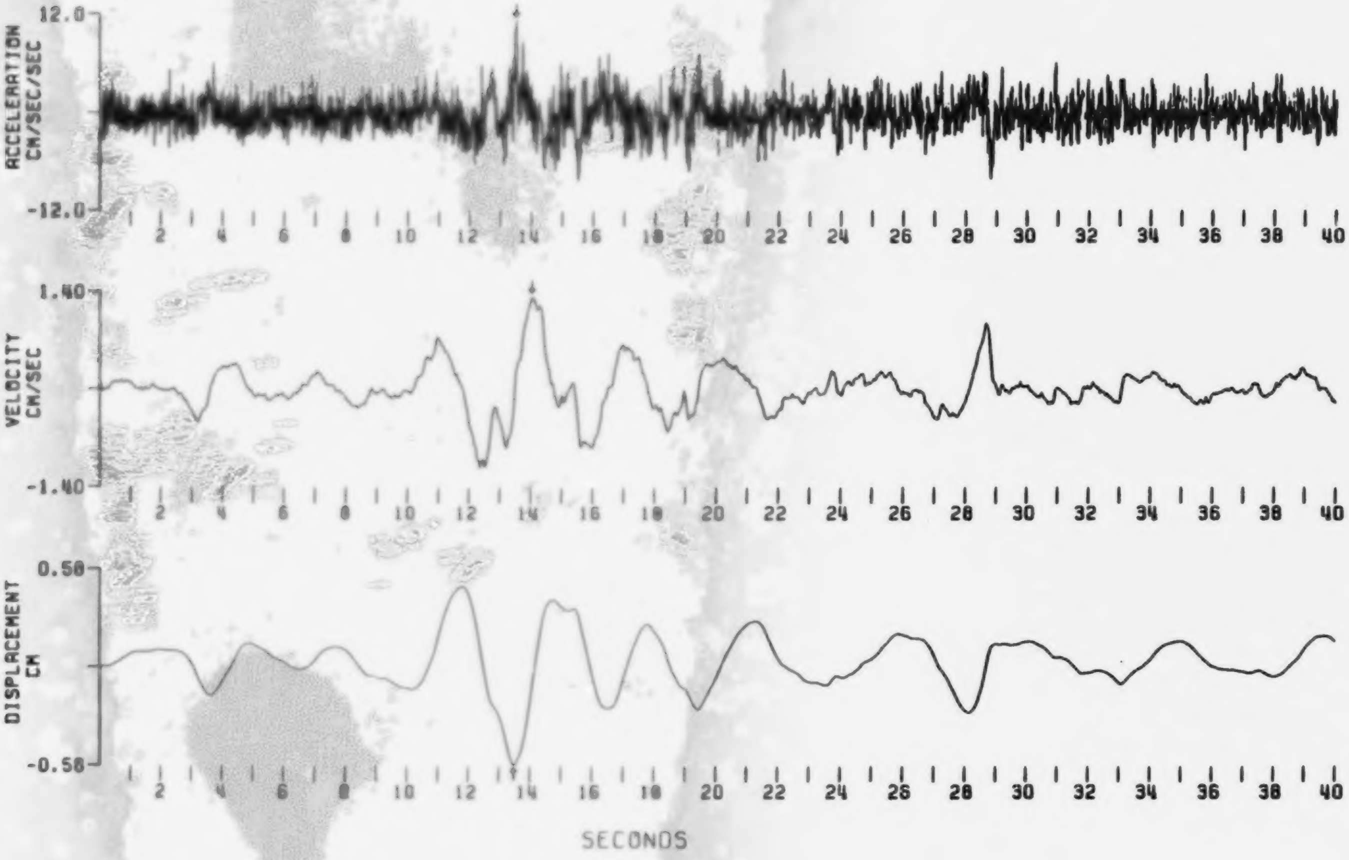
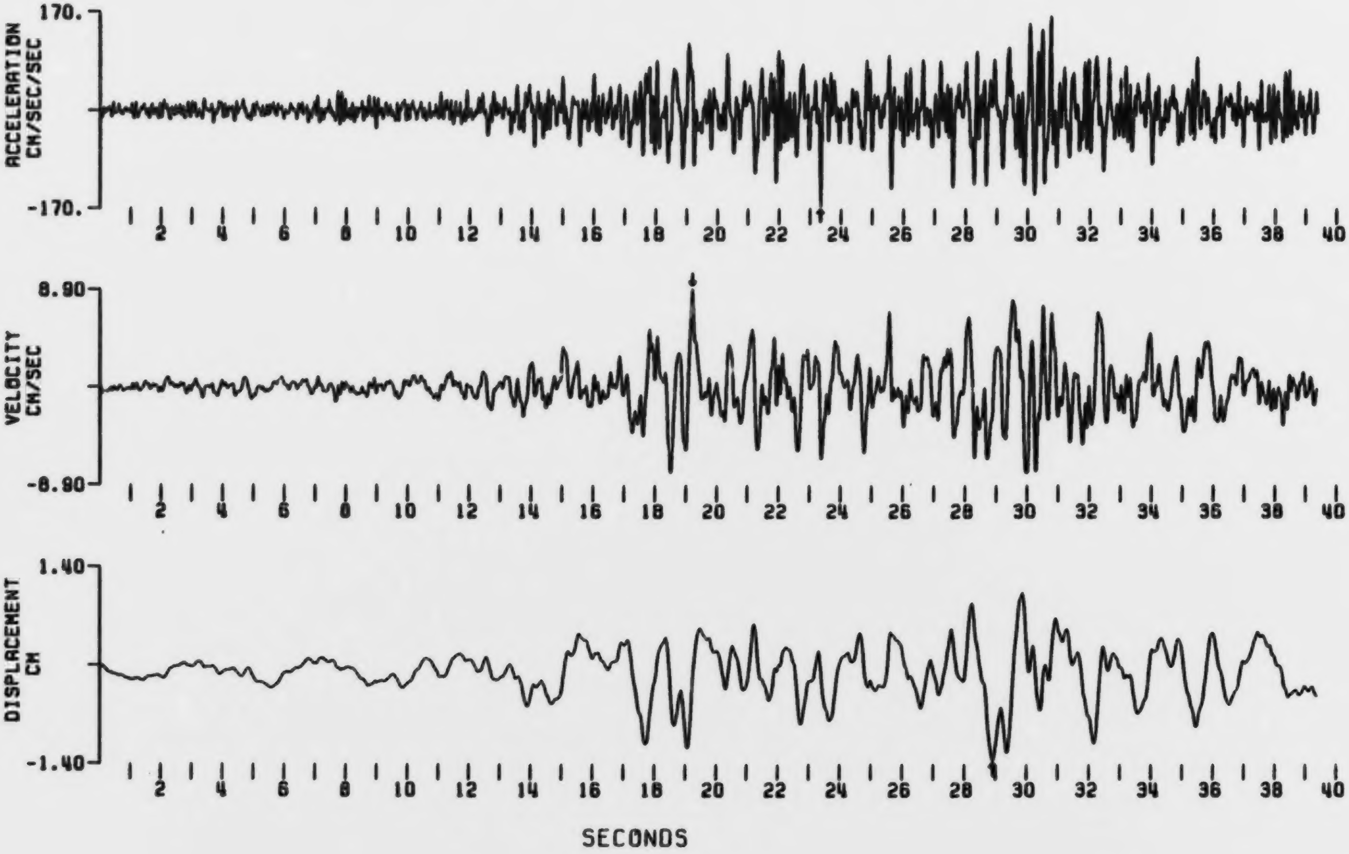
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
PAPUDO
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
PEAK VALUES: ACCEL=193.09 CM/SEC/SEC, VELOCITY=6.26 CM/SEC, DISPL=-1.10 CM



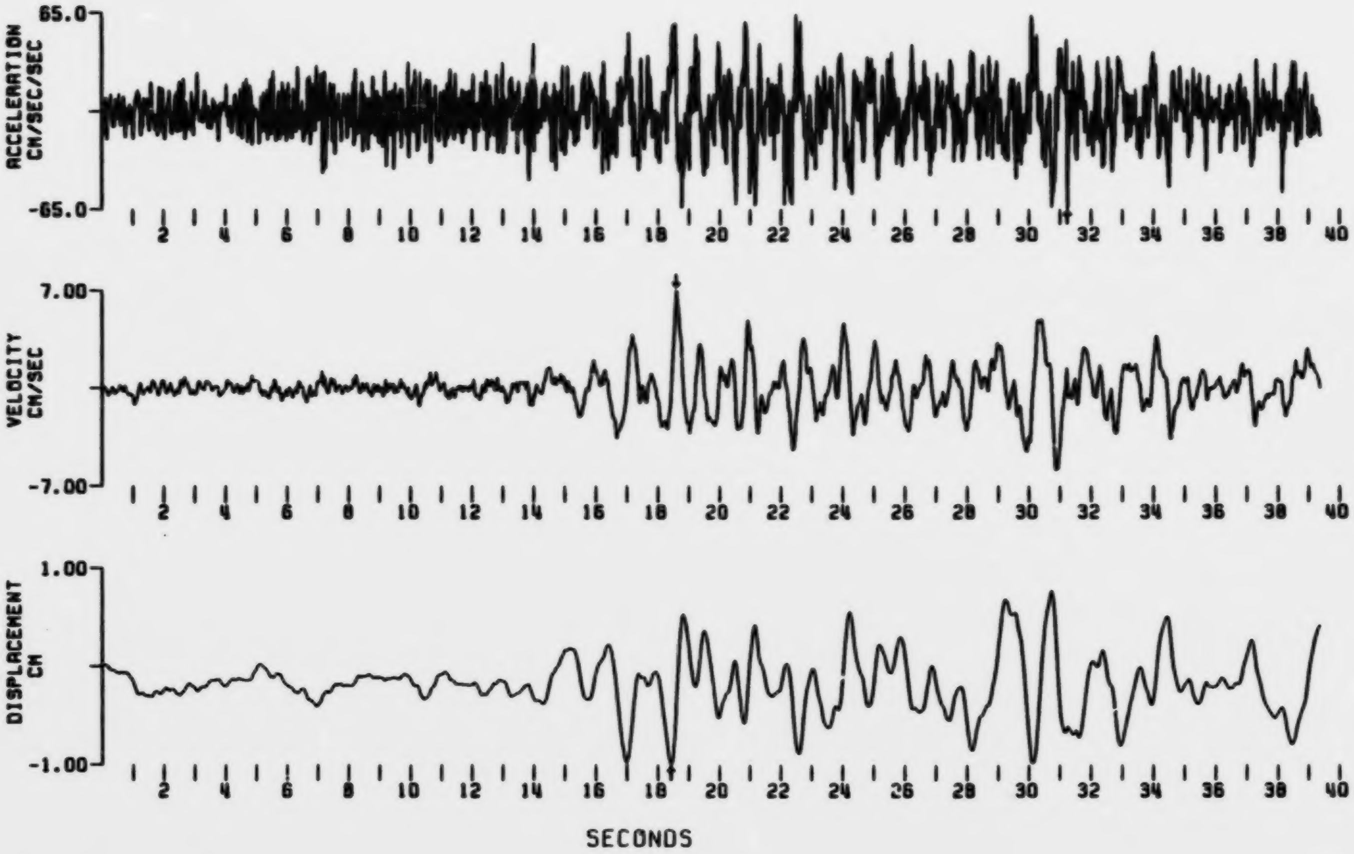
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
PAPUDO
140 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
PEAK VALUES: ACCEL=11.16 CM/SEC/SEC, VELOCITY=1.32 CM/SEC, DISPL=-0.58 CM



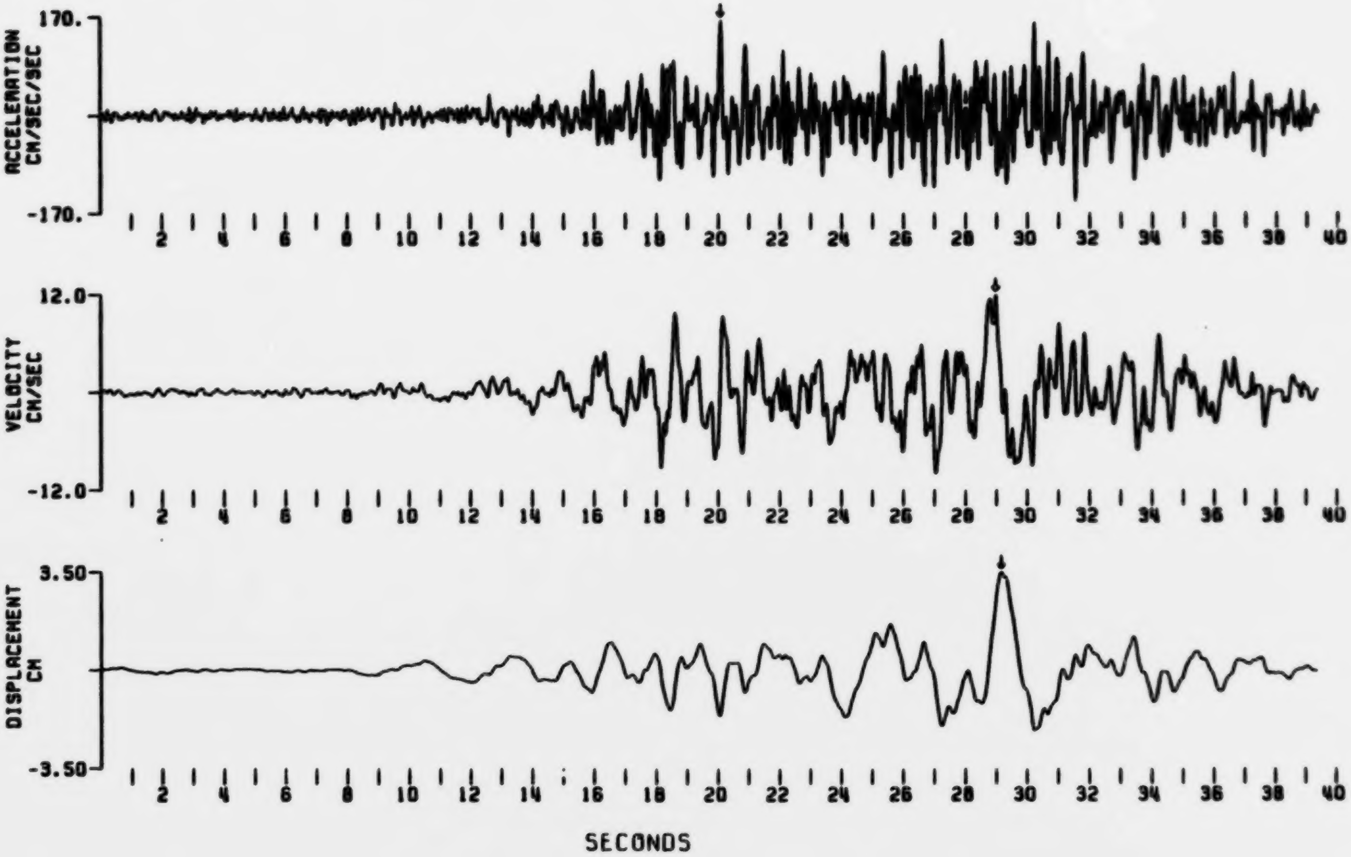
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
TALCA
280 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
PEAK VALUES: ACCEL=-167.23 CM/SEC/SEC, VELOCITY=8.90 CM/SEC, DISPL=-1.35 CM



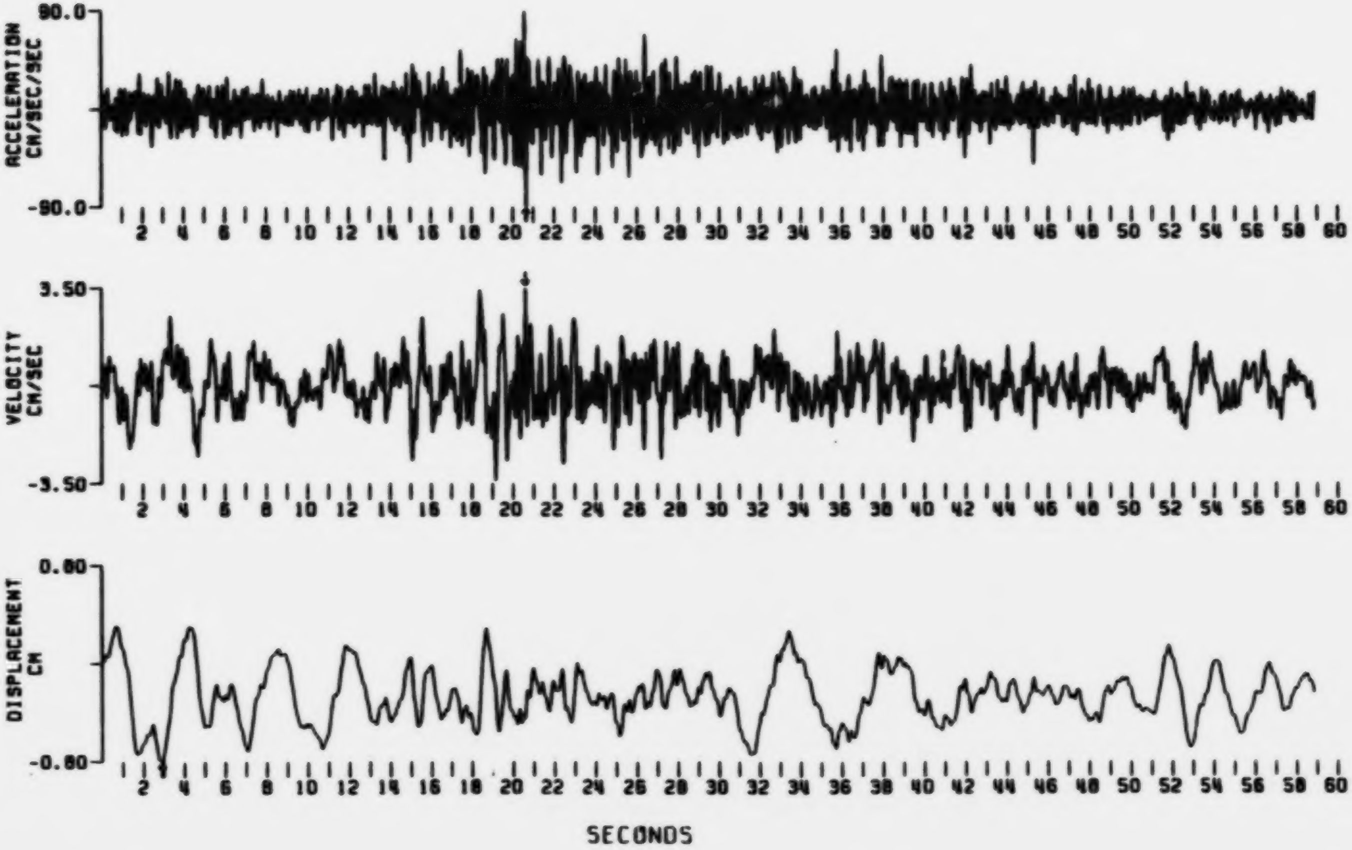
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
TALCA
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
PEAK VALUES: ACCEL=-64.70 CM/SEC/SEC, VELOCITY=6.95 CM/SEC, DISPL=-1.00 CM



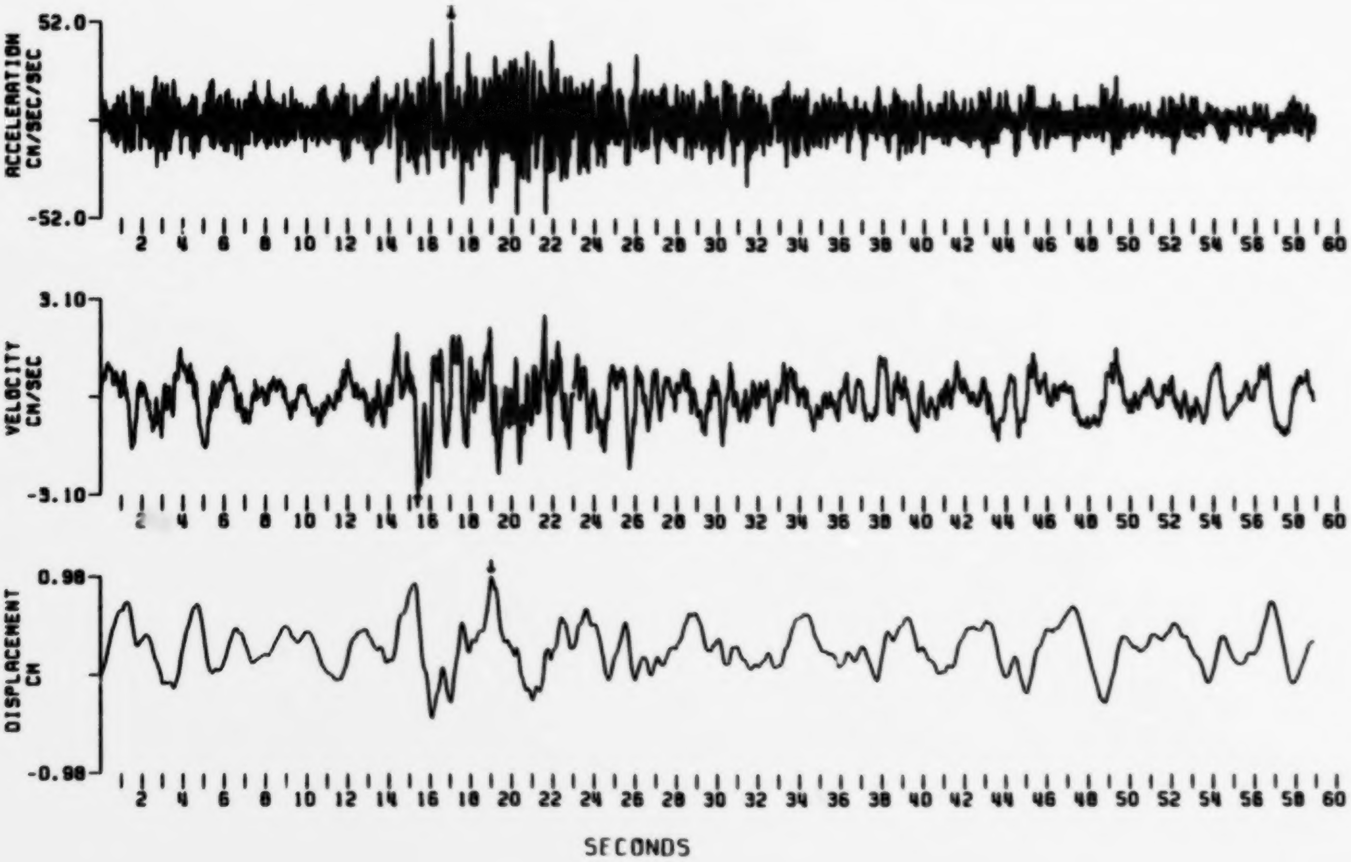
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
TALCA
010 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
PEAK VALUES: ACCEL=163.89 CM/SEC/SEC, VELOCITY=11.88 CM/SEC, DISPL=3.47 CM



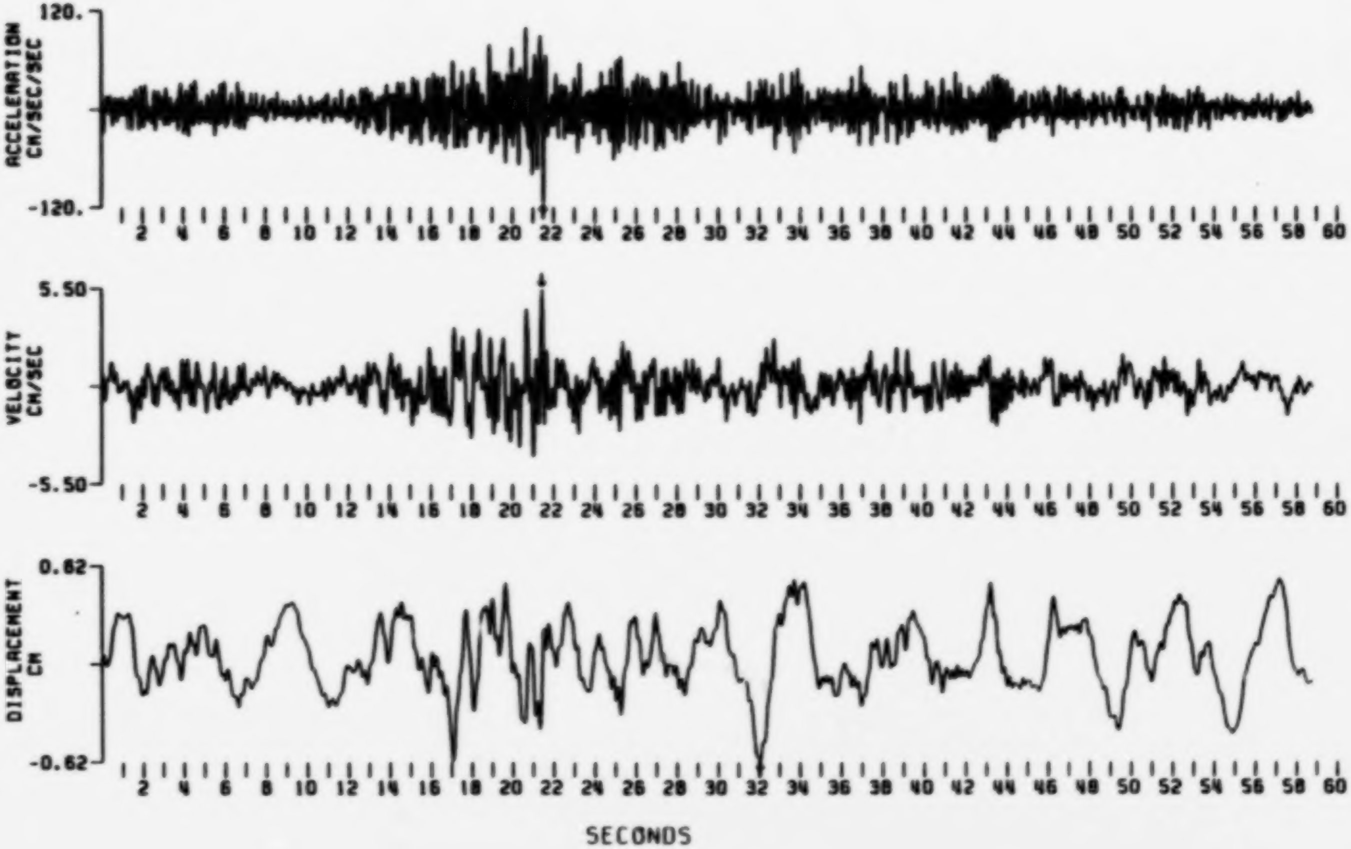
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ILLAPEL
360 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
PEAK VALUES: ACCEL=-89.60 CM/SEC/SEC, VELOCITY=3.47 CM/SEC, DISPL=-0.80 CM



CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ILLAPEL
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
PEAK VALUES: ACCEL=51.72 CM/SEC/SEC, VELOCITY=-3.00 CM/SEC, DISPL=0.98 CM



CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ILLAPEL
90 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
PEAK VALUES: ACCEL=-115.06 CM/SEC/SEC, VELOCITY=5.42 CM/SEC, DISPL=-0.62 CM



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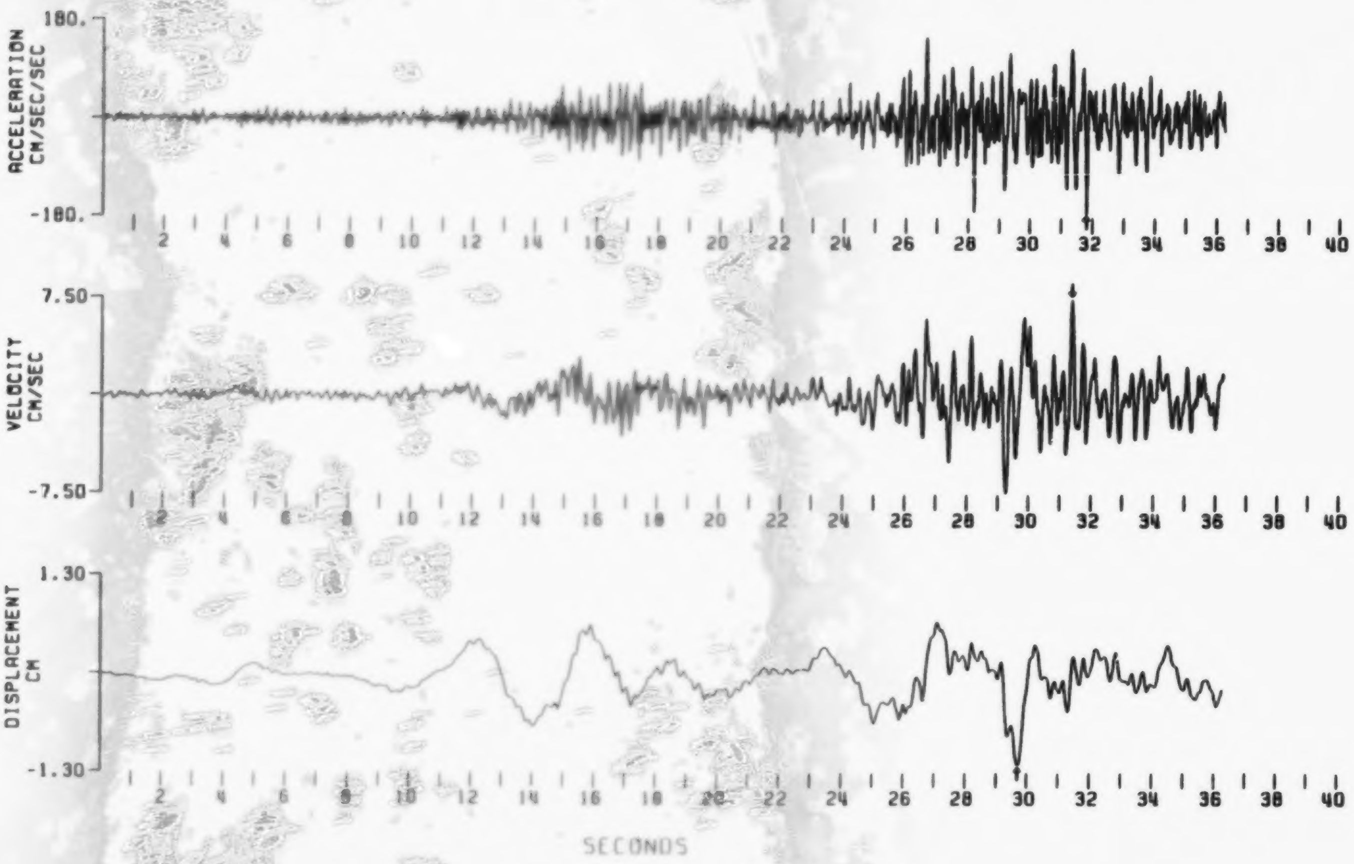
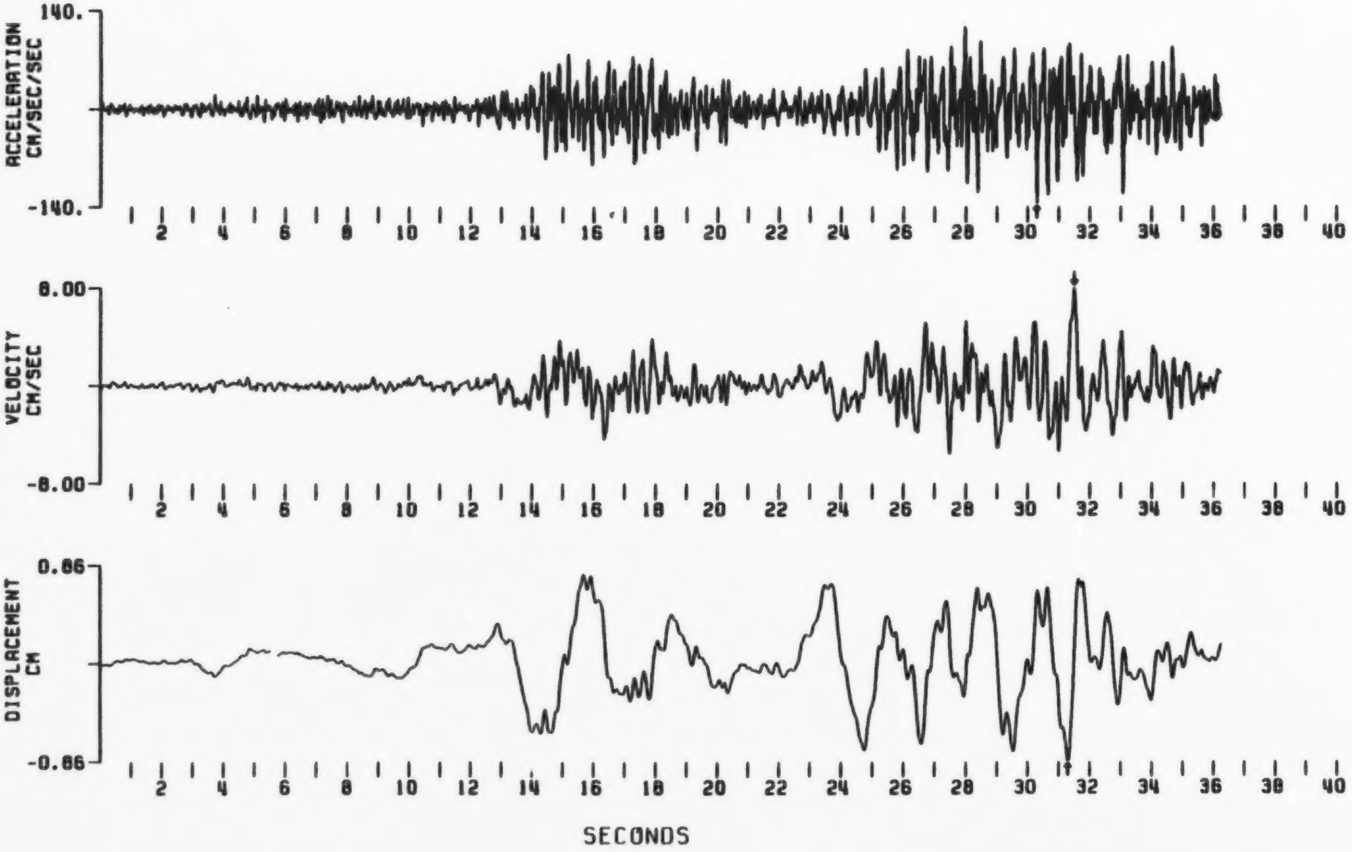
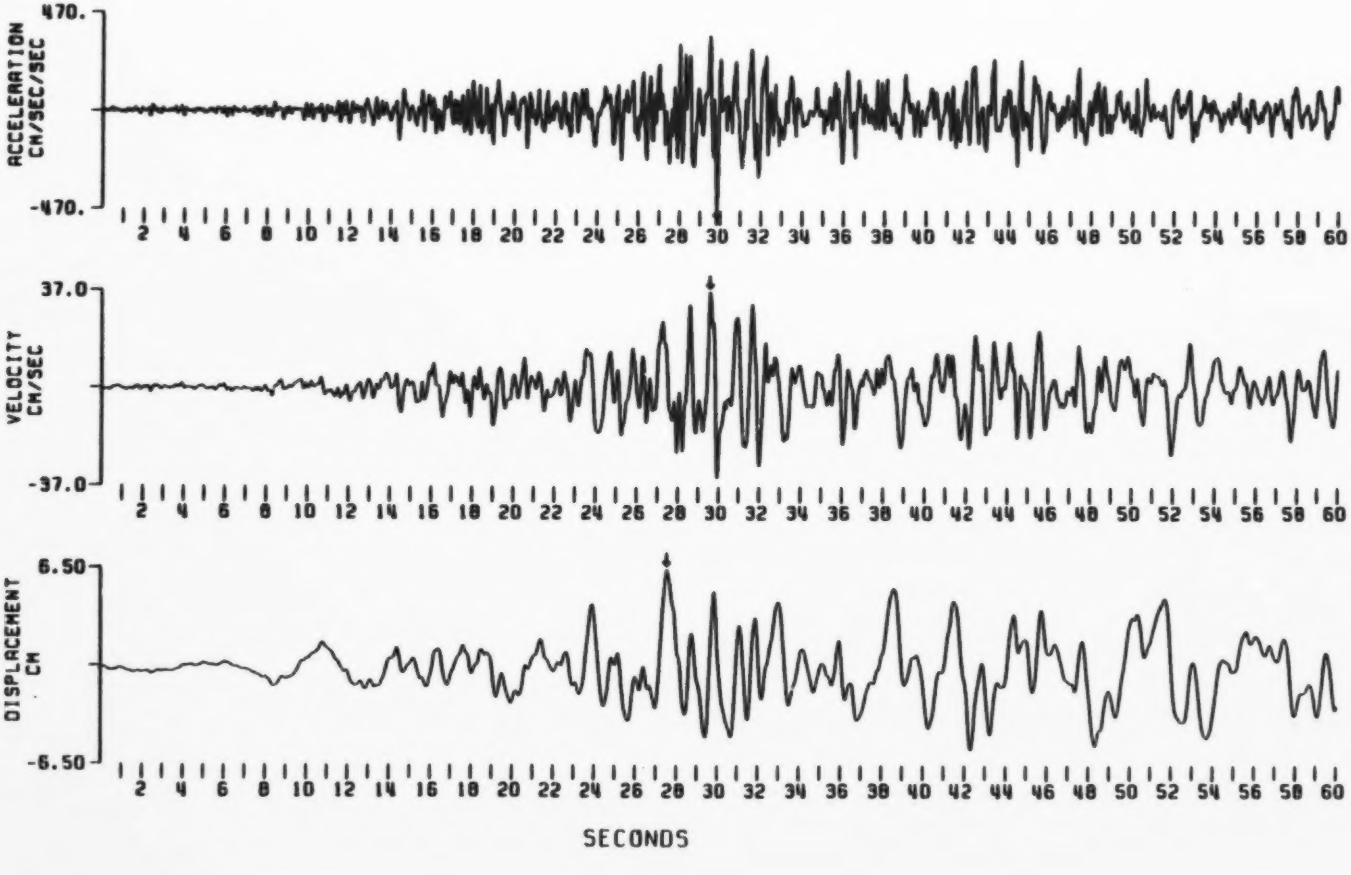
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
LALIGUA
360 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
PEAK VALUES: ACCEL=-173.22 CM/SEC/SEC, VELOCITY=7.40 CM/SEC, DISPL=-1.20 CM



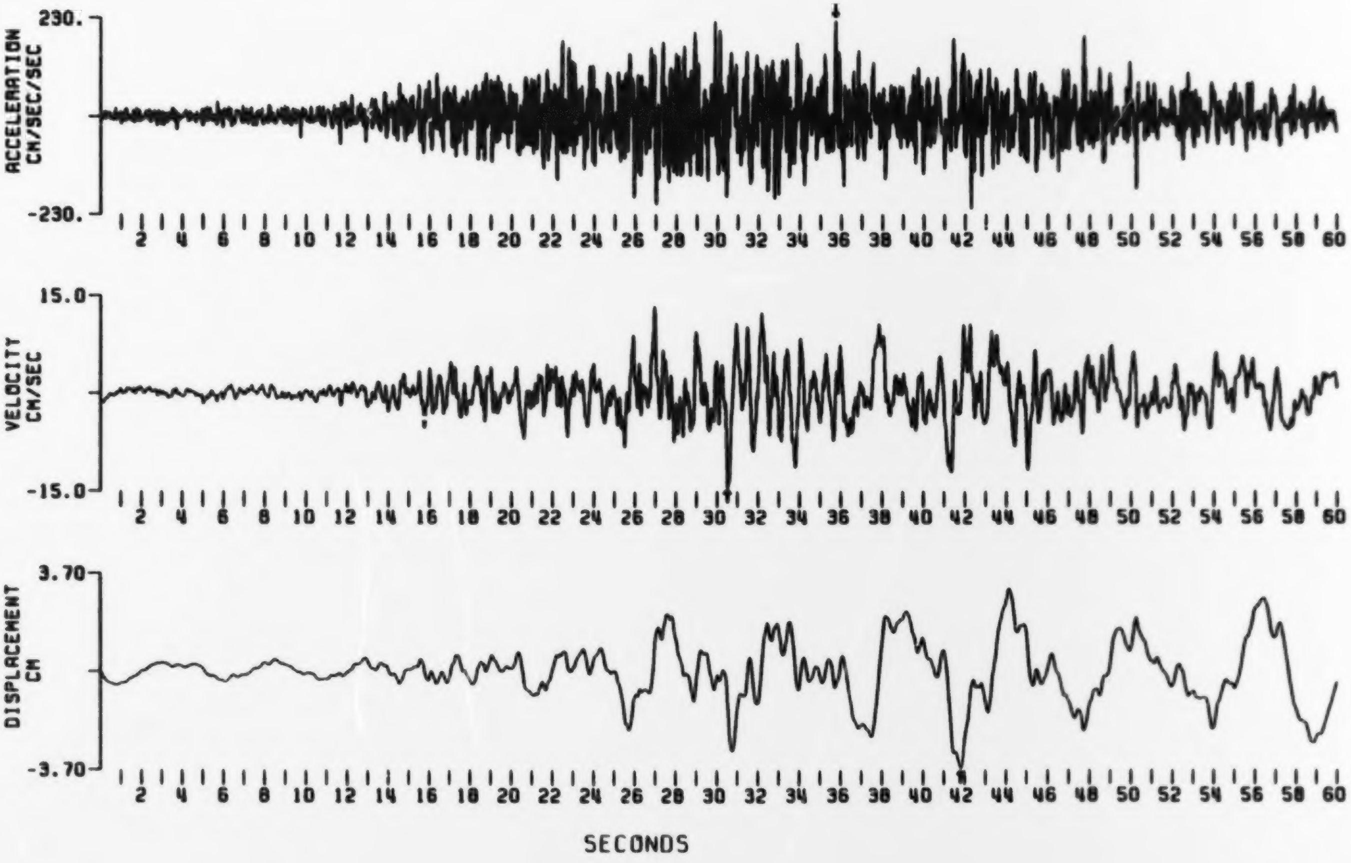
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
LALIGUA
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
PEAK VALUES: ACCEL=-135.11 CM/SEC/SEC, VELOCITY=7.91 CM/SEC, DISPL=-0.86 CM



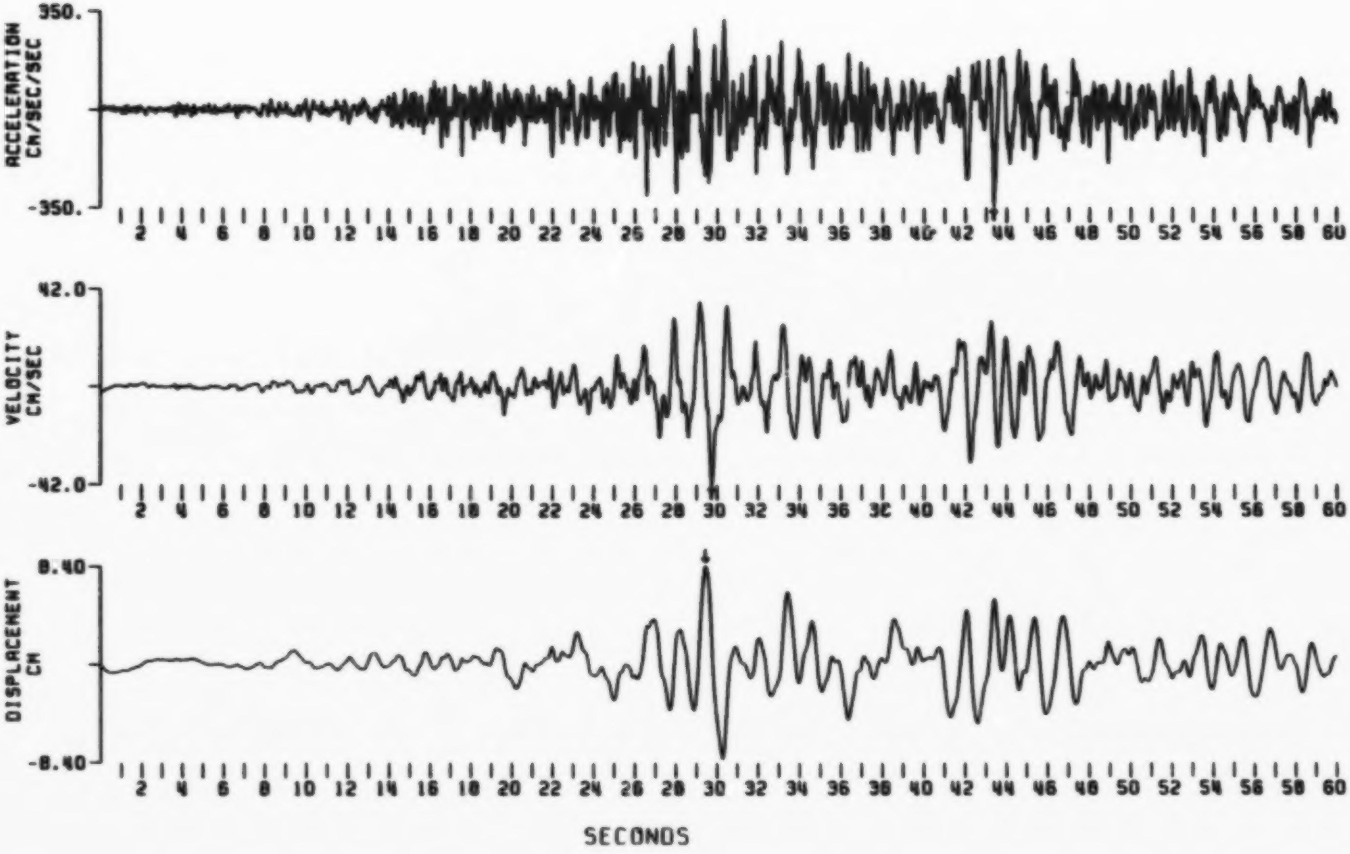
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
LLAYLLAY
360 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167, ORDER 4
PEAK VALUES: ACCEL=-465.30 CM/SEC/SEC, VELOCITY=36.66 CM/SEC, DISPL=6.40 CM



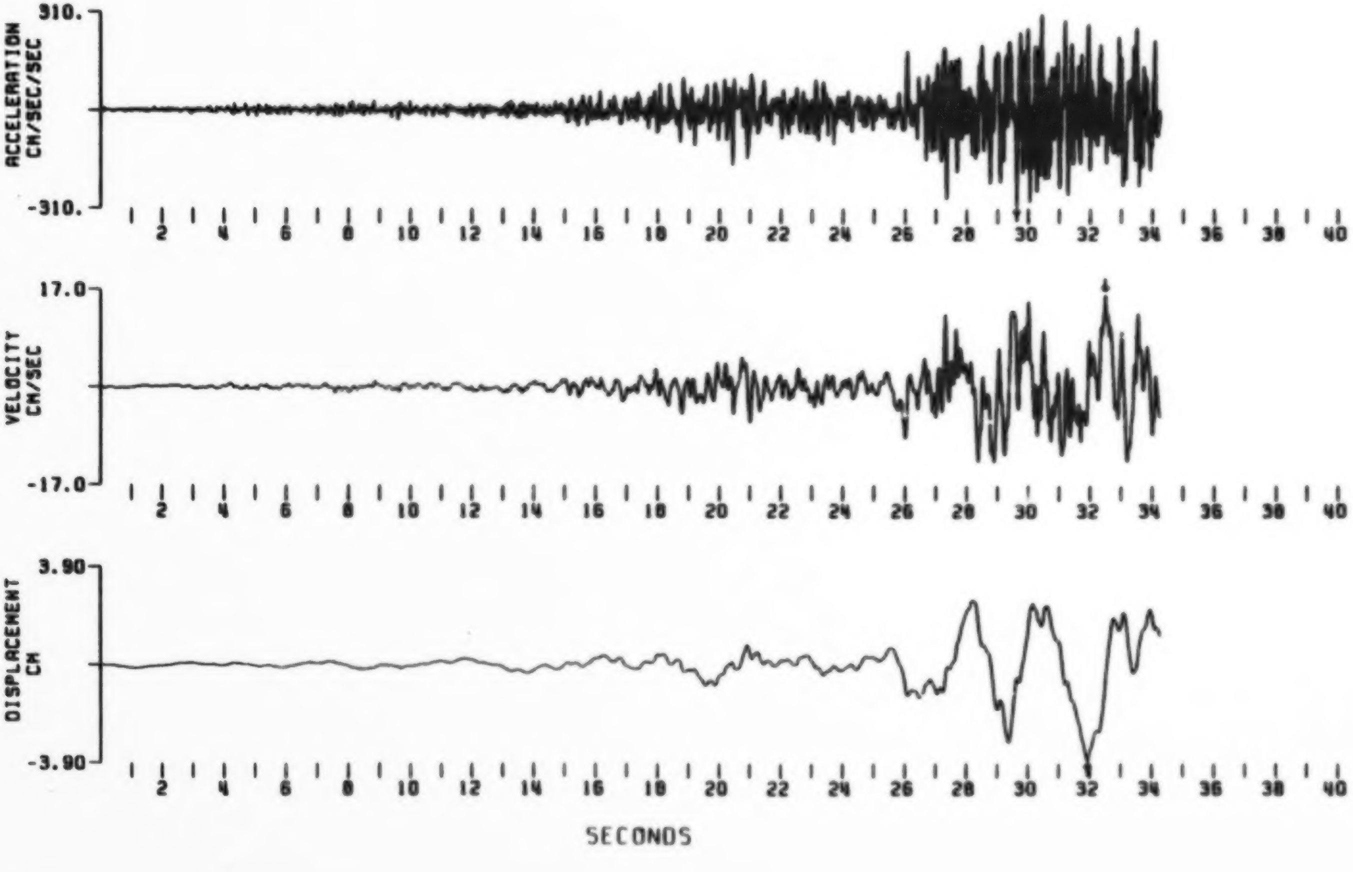
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
LLAYLLAY
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167, ORDER 4
PEAK VALUES: ACCEL=222.84 CM/SEC/SEC, VELOCITY=-14.35 CM/SEC, DISPL=-3.65 CM



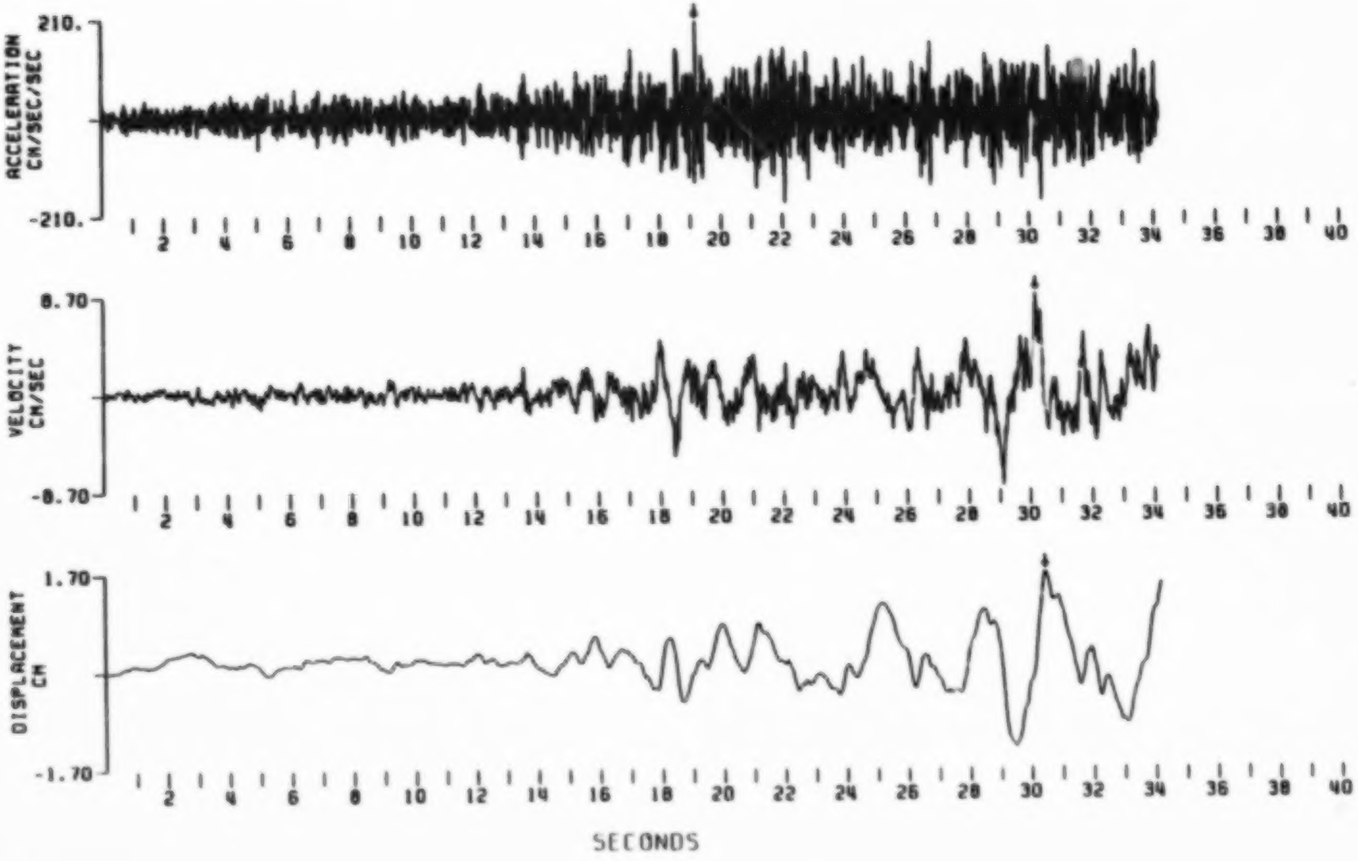
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
LLAYLLAY
90 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167, ORDER 4
PEAK VALUES: ACCEL=-345.47 CM/SEC/SEC, VELOCITY=-41.79 CM/SEC, DISPL=8.40 CM



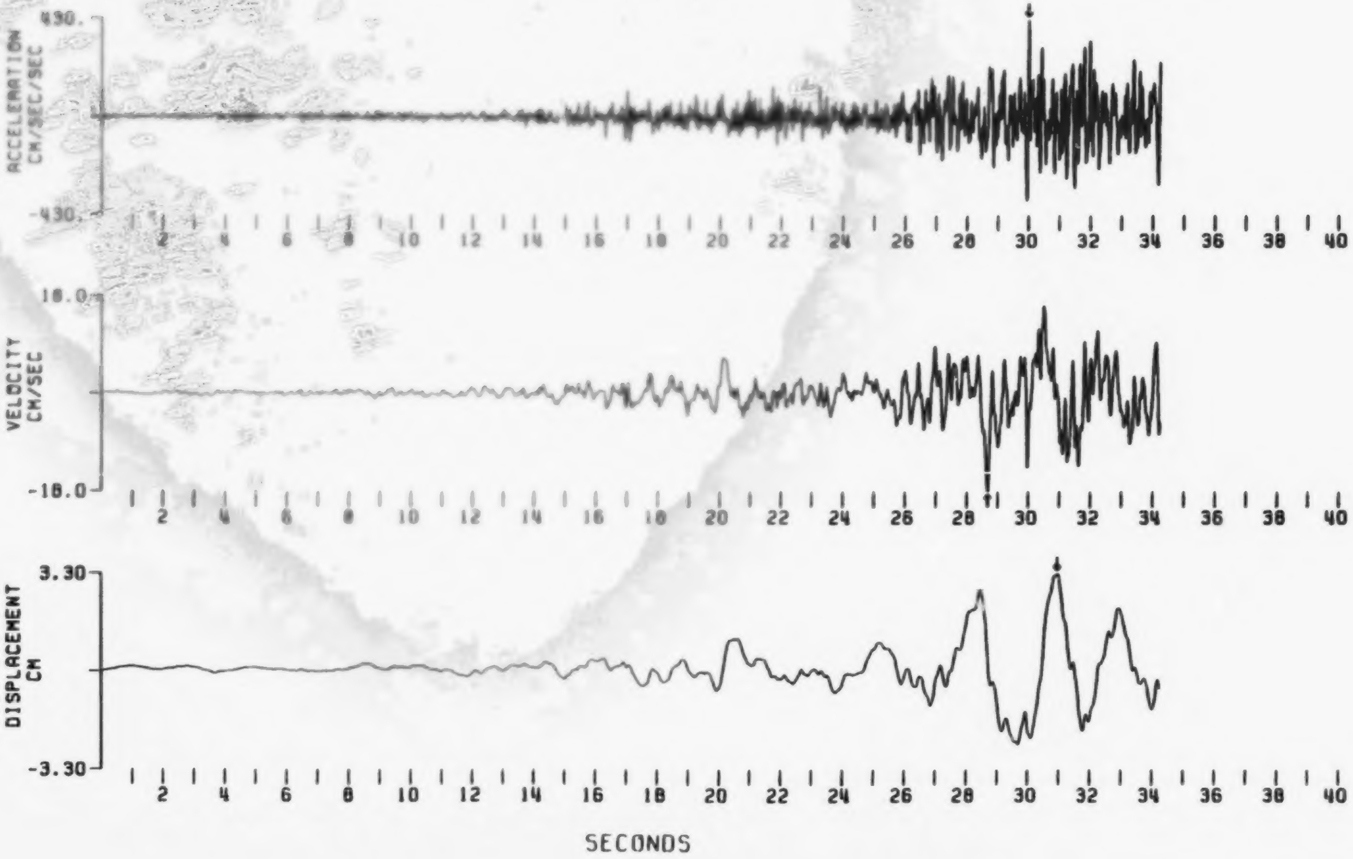
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
SAN FELIPE
360 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
PEAK VALUES: ACCEL=-303.18 CM/SEC/SEC, VELOCITY=16.10 CM/SEC, DISPL=-3.83 CM



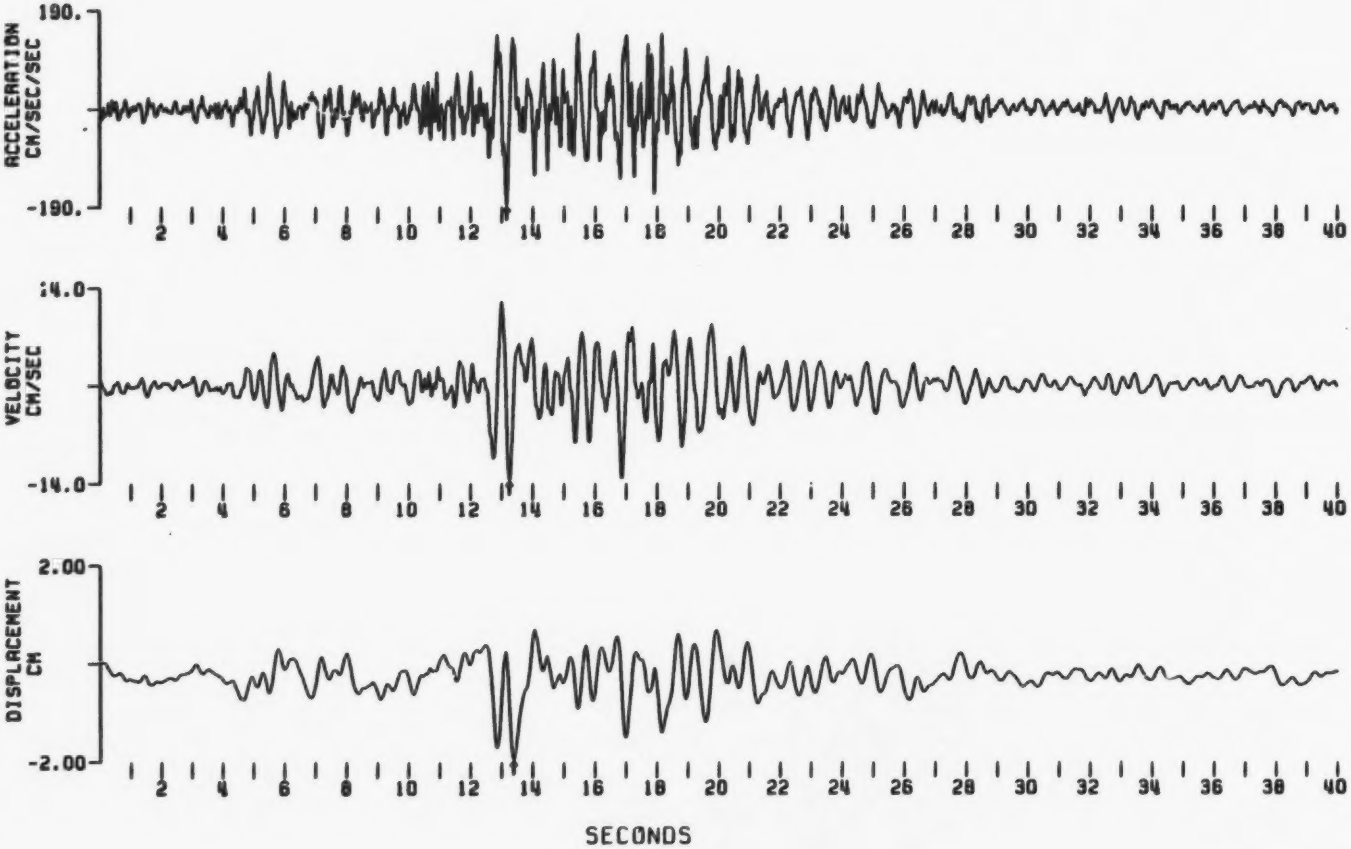
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
SAN FELIPE
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
PEAK VALUES: ACCEL=200.58 CM/SEC/SEC, VELOCITY=8.66 CM/SEC, DISPL=1.68 CM



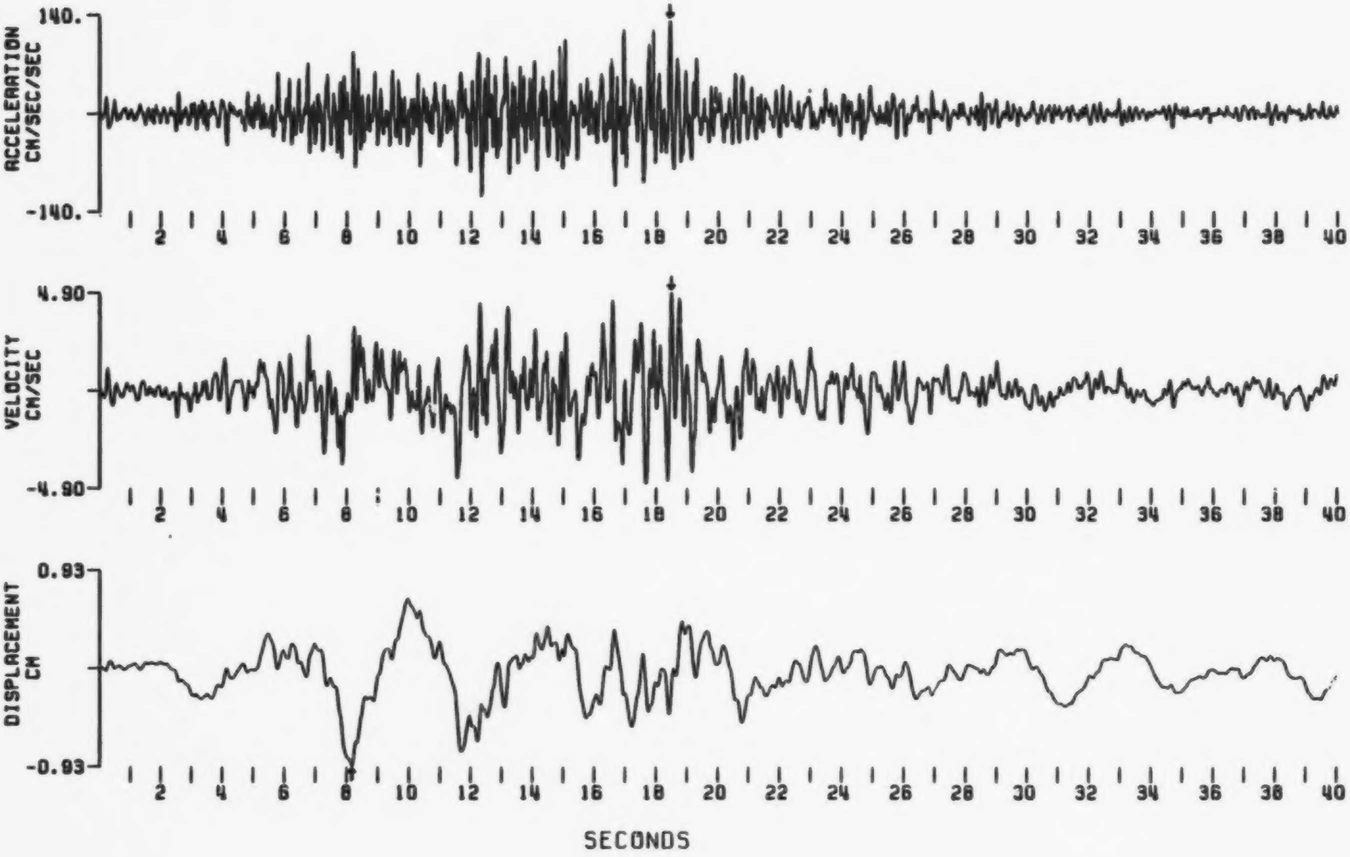
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
SAN FELIPE
90 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
PEAK VALUES: ACCEL=425.12 CM/SEC/SEC, VELOCITY=-17.96 CM/SEC, DISPL=3.27 CM



CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
LLOLLEO
100 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-186.97 CM/SEC/SEC, VELOCITY=-13.40 CM/SEC, DISPL=-1.94 CM



CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
LLOLLEO
UP
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=130.61 CM/SEC/SEC, VELOCITY=4.86 CM/SEC, DISPL=-0.92 CM



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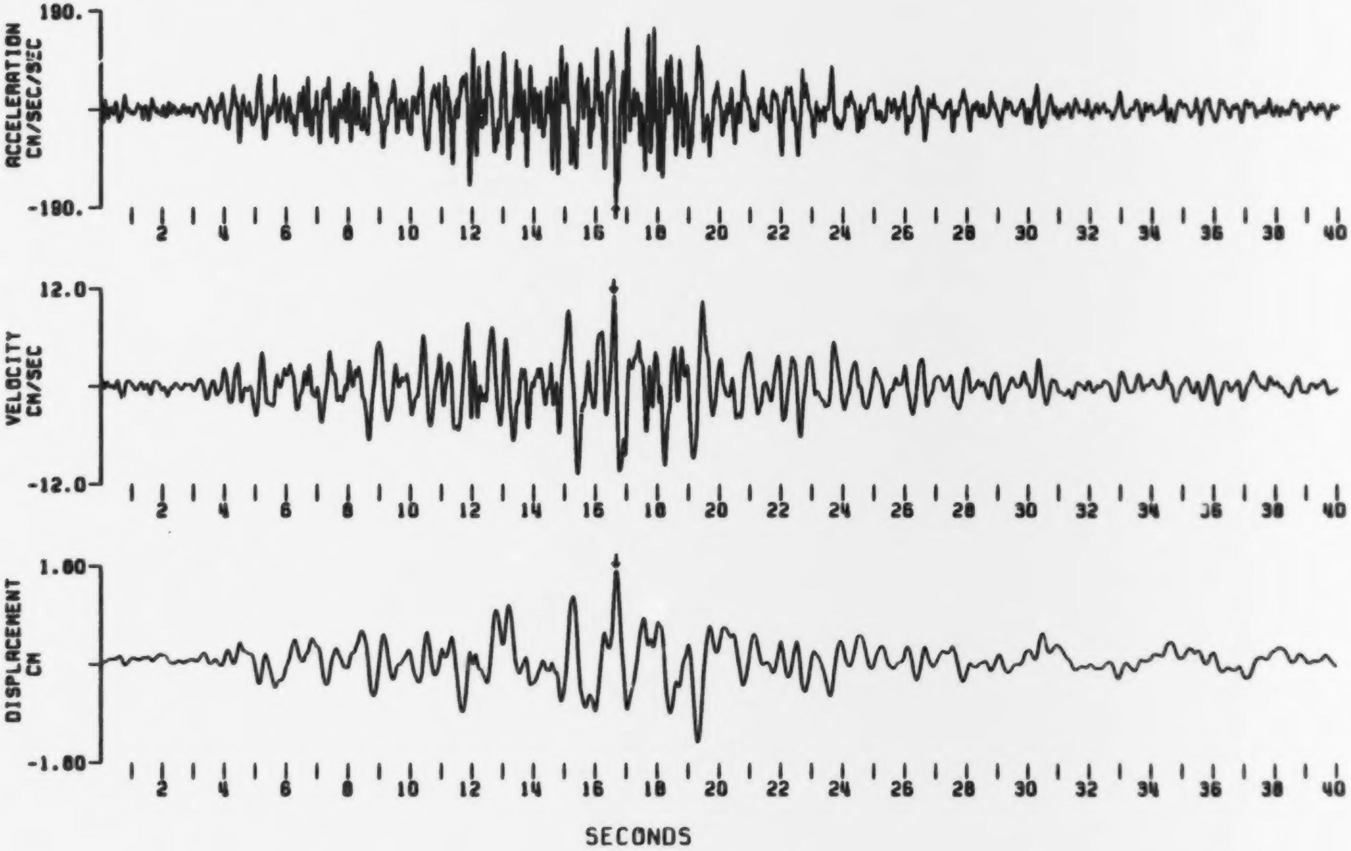
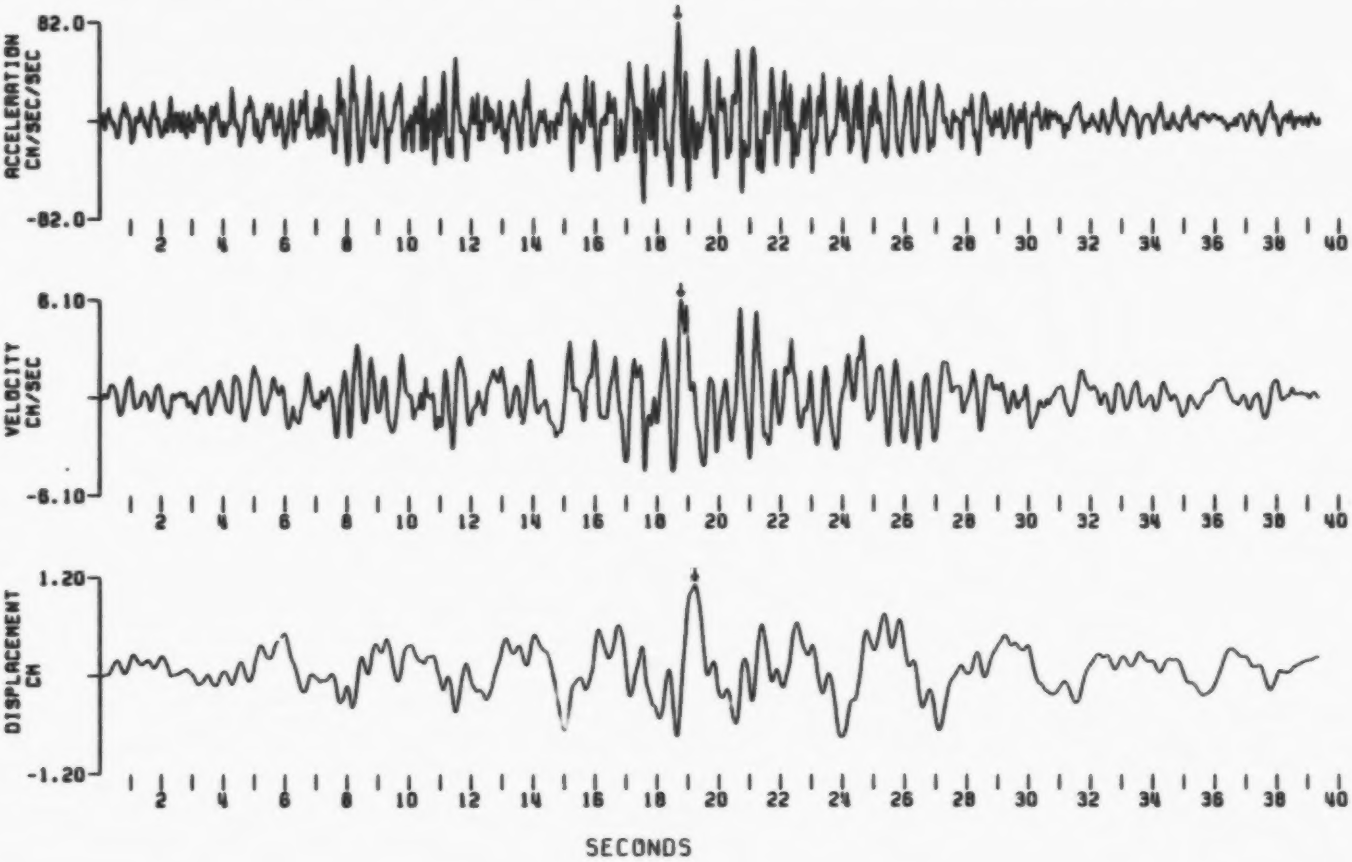
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
LLOLLEO
10 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-182.42 CM/SEC/SEC, VELOCITY=11.01 CM/SEC, DISPL=1.71 CM



CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
VINA DEL MAR
290 DEGREES
EARTHQUAKE OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=81.10 CM/SEC/SEC, VELOCITY=6.06 CM/SEC, DISPL=1.10 CM



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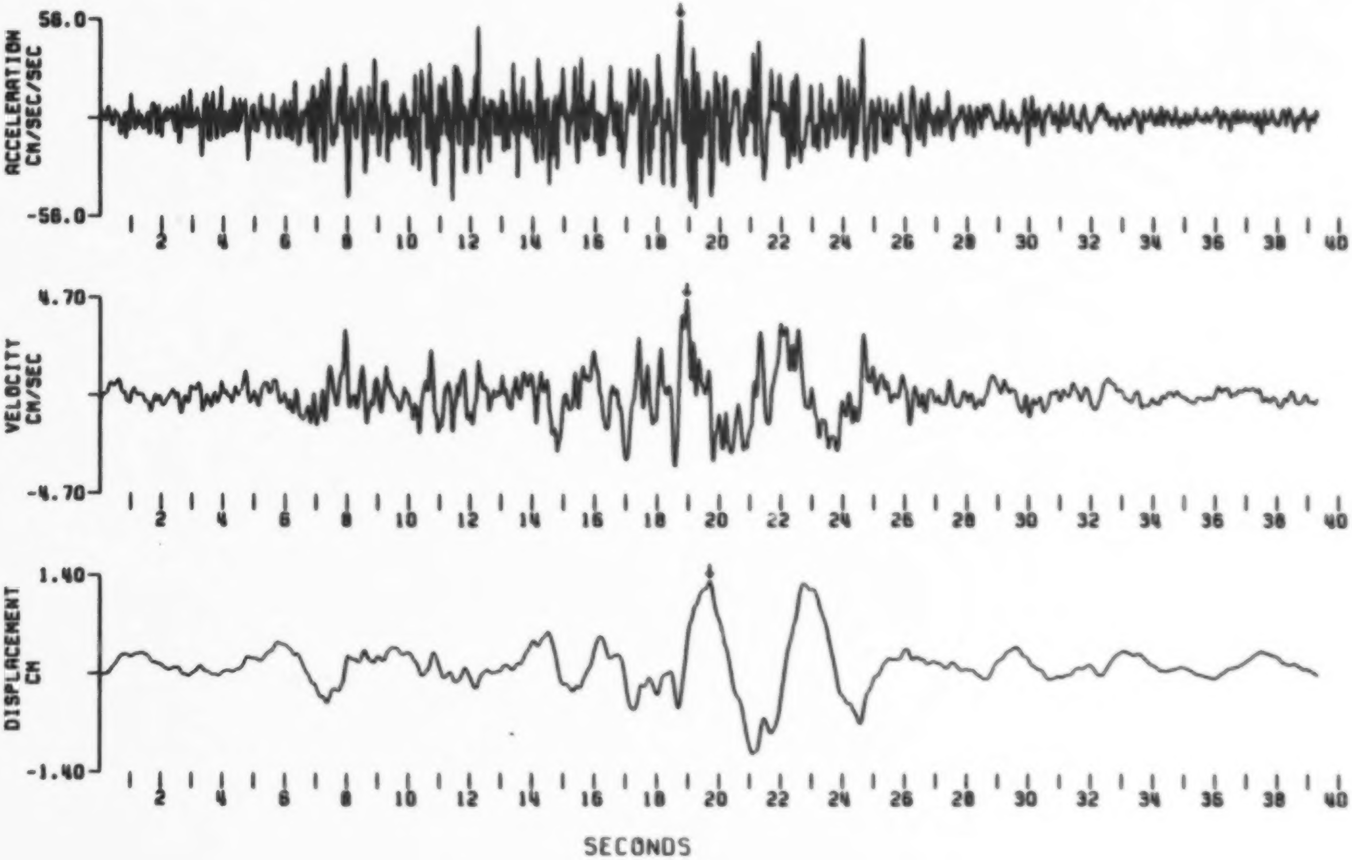
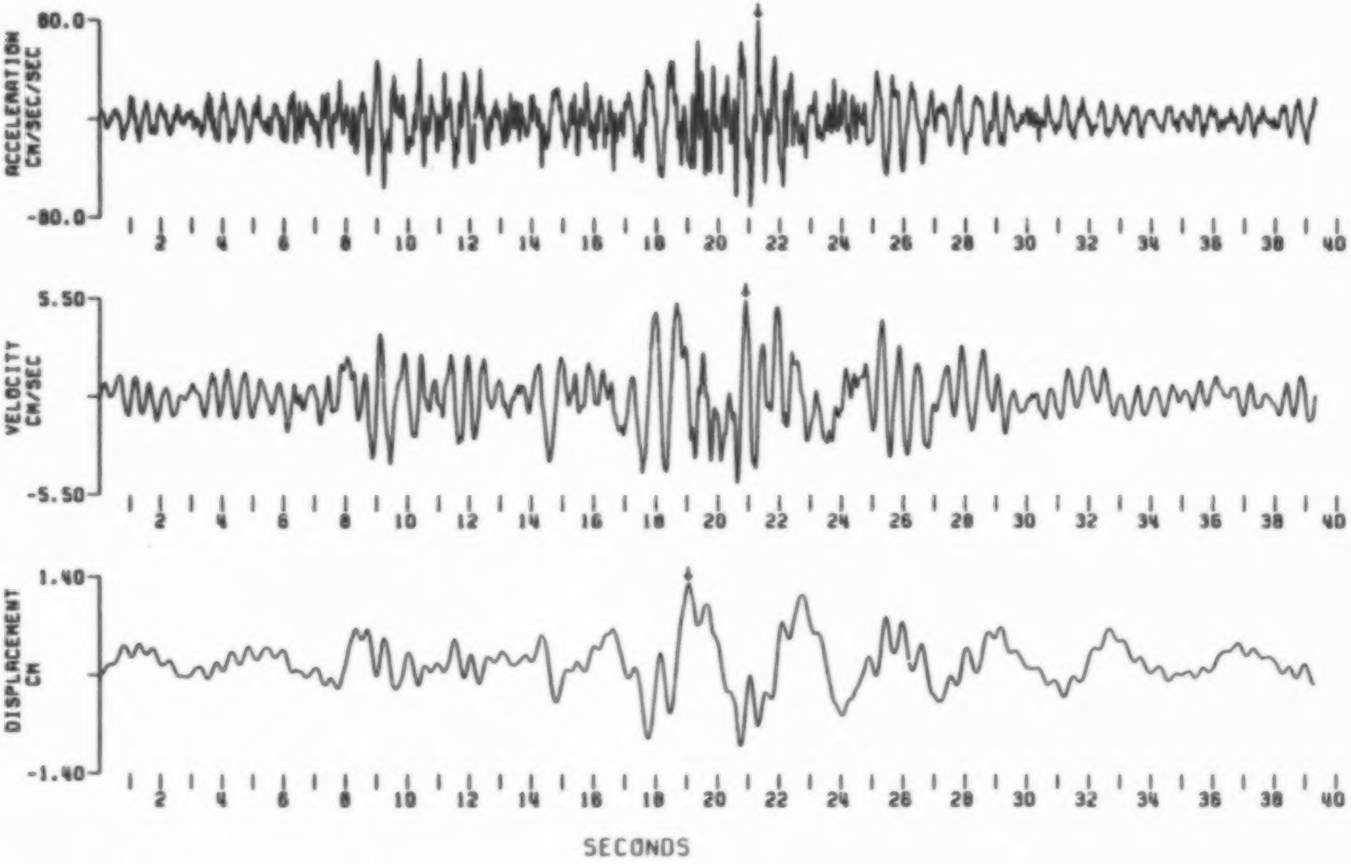
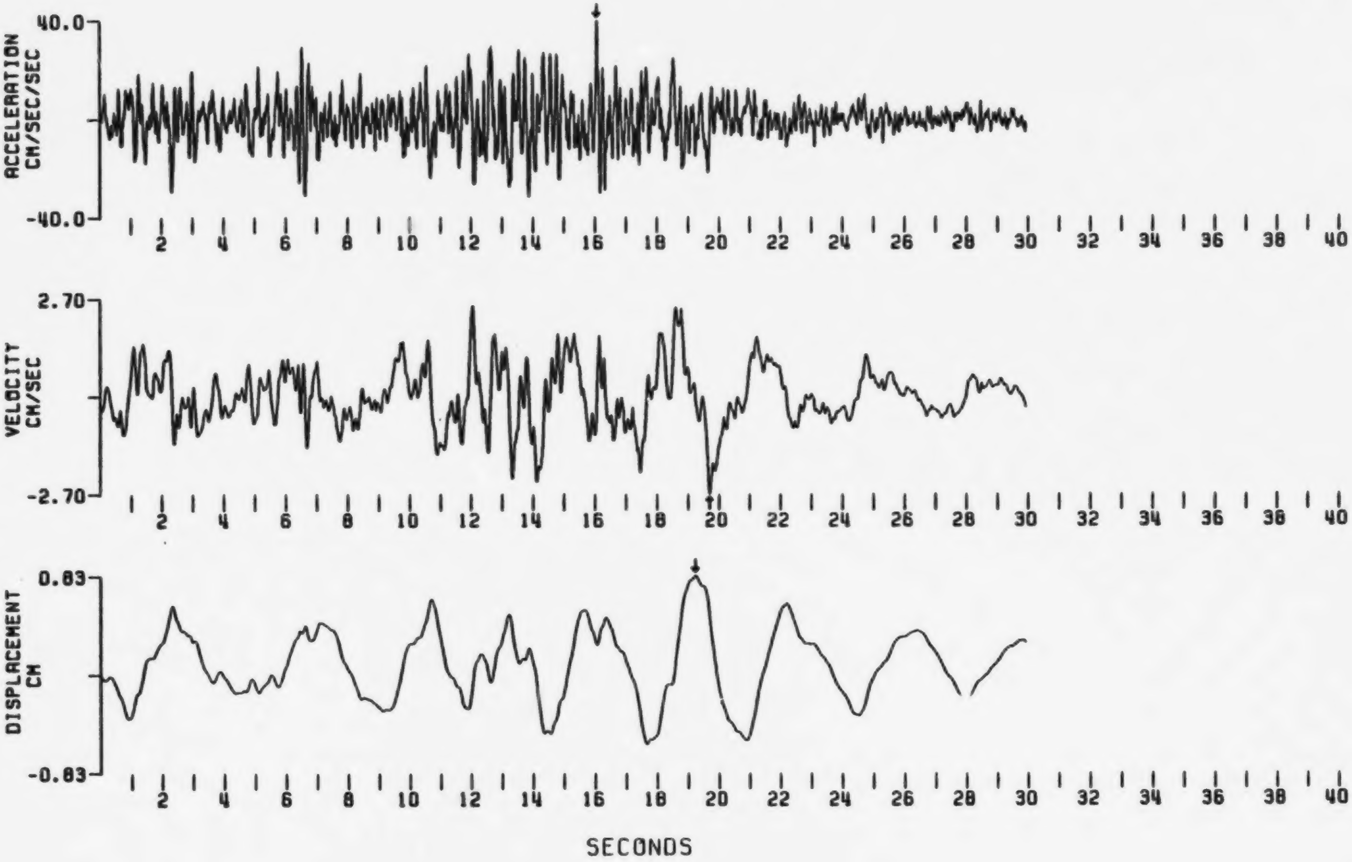
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
VINA DEL MAR
UP
EARTHQUAKE OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=55.26 CM/SEC/SEC, VELOCITY=4.61 CM/SEC, DISPL=1.33 CM



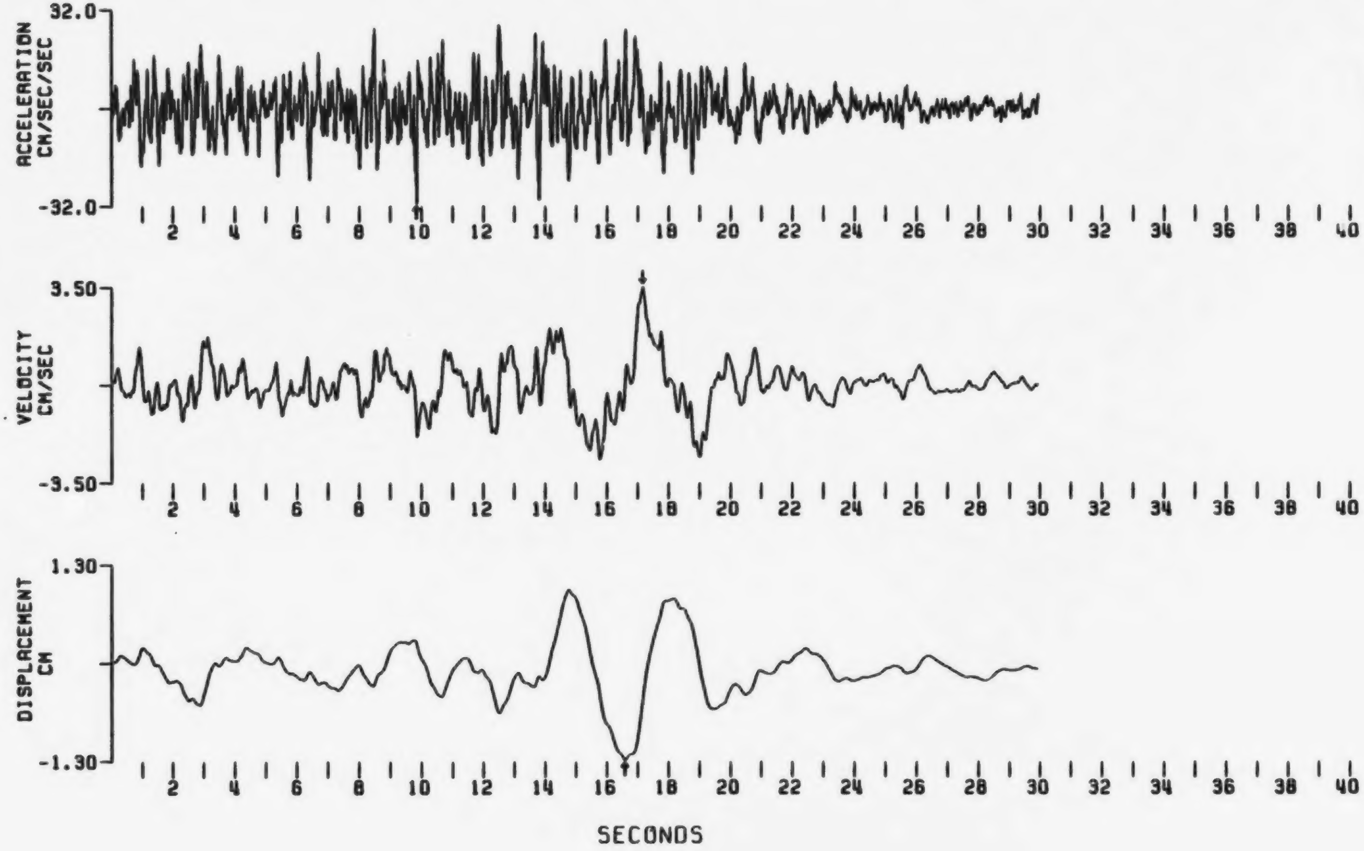
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
VINA DEL MAR
200 DEGREES
EARTHQUAKE OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=79.82 CM/SEC/SEC, VELOCITY=5.42 CM/SEC, DISPL=1.31 CM



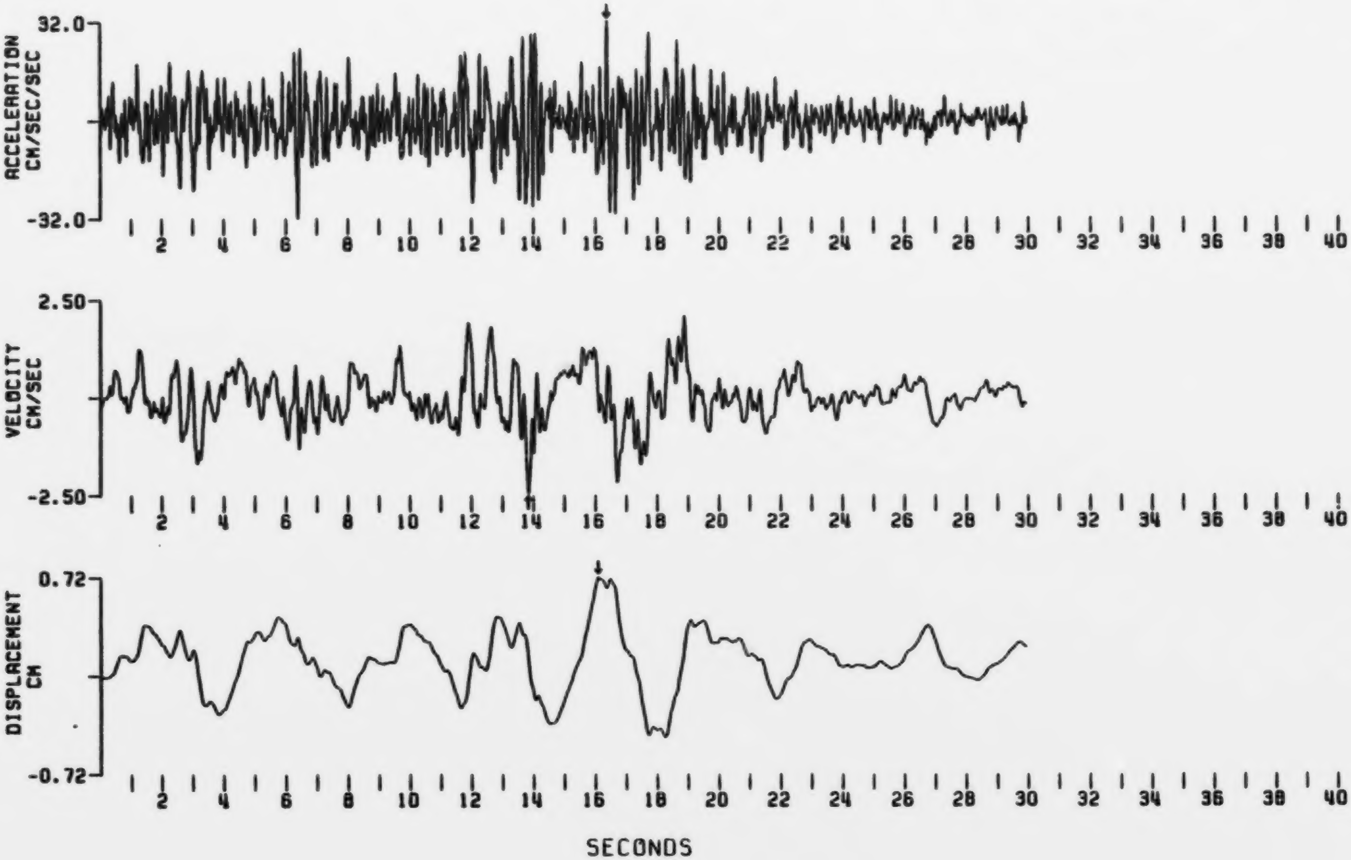
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
VALPARAISO, U.T.F.S.M.
160 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
PEAK VALUES: ACCEL=39.68 CM/SEC/SEC, VELOCITY=-2.70 CM/SEC, DISPL=0.83 CM



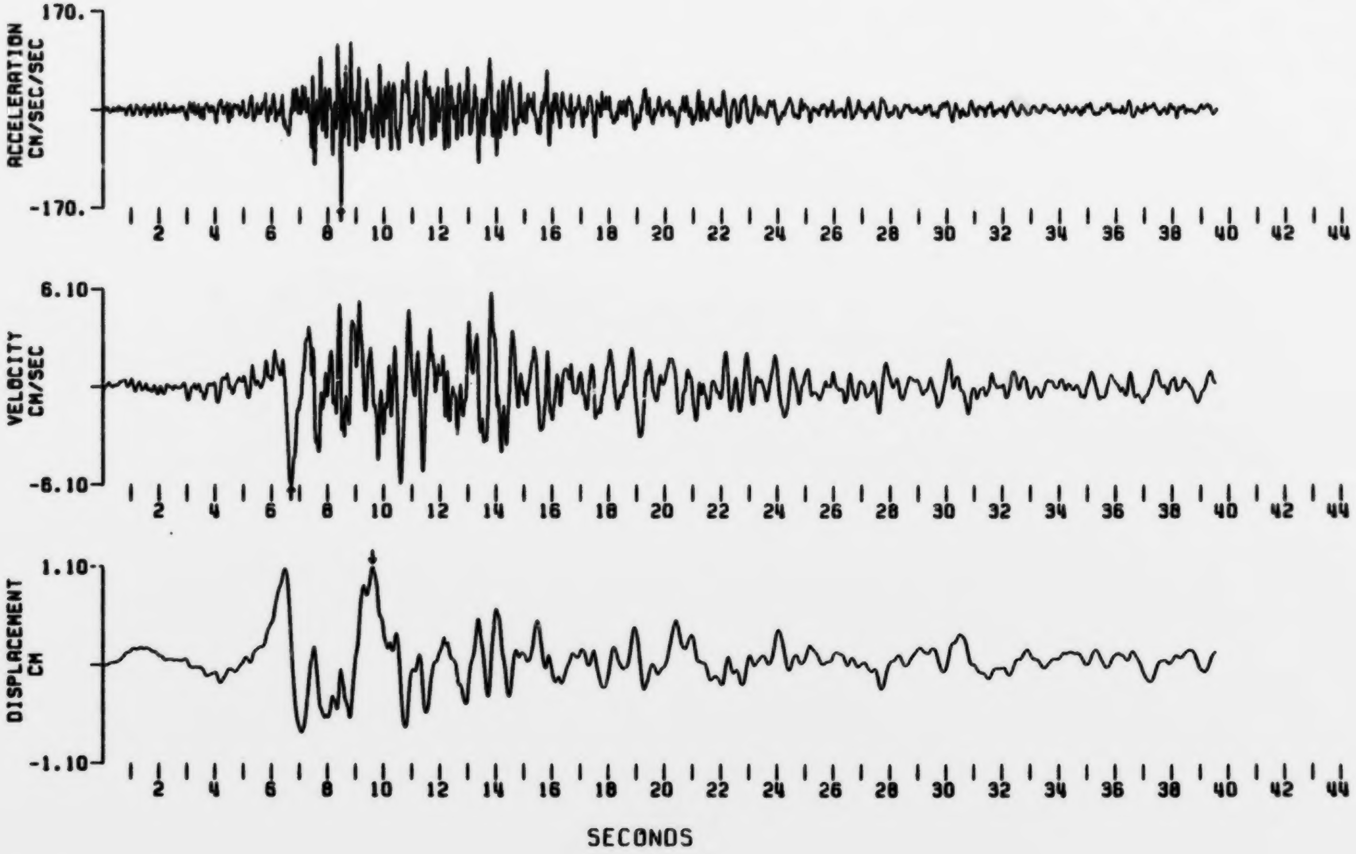
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
VALPARAISO, U.T.F.S.M.
UP
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
PEAK VALUES: ACCEL=-31.33 CM/SEC/SEC, VELOCITY=3.49 CM/SEC, DISPL=-1.29 CM



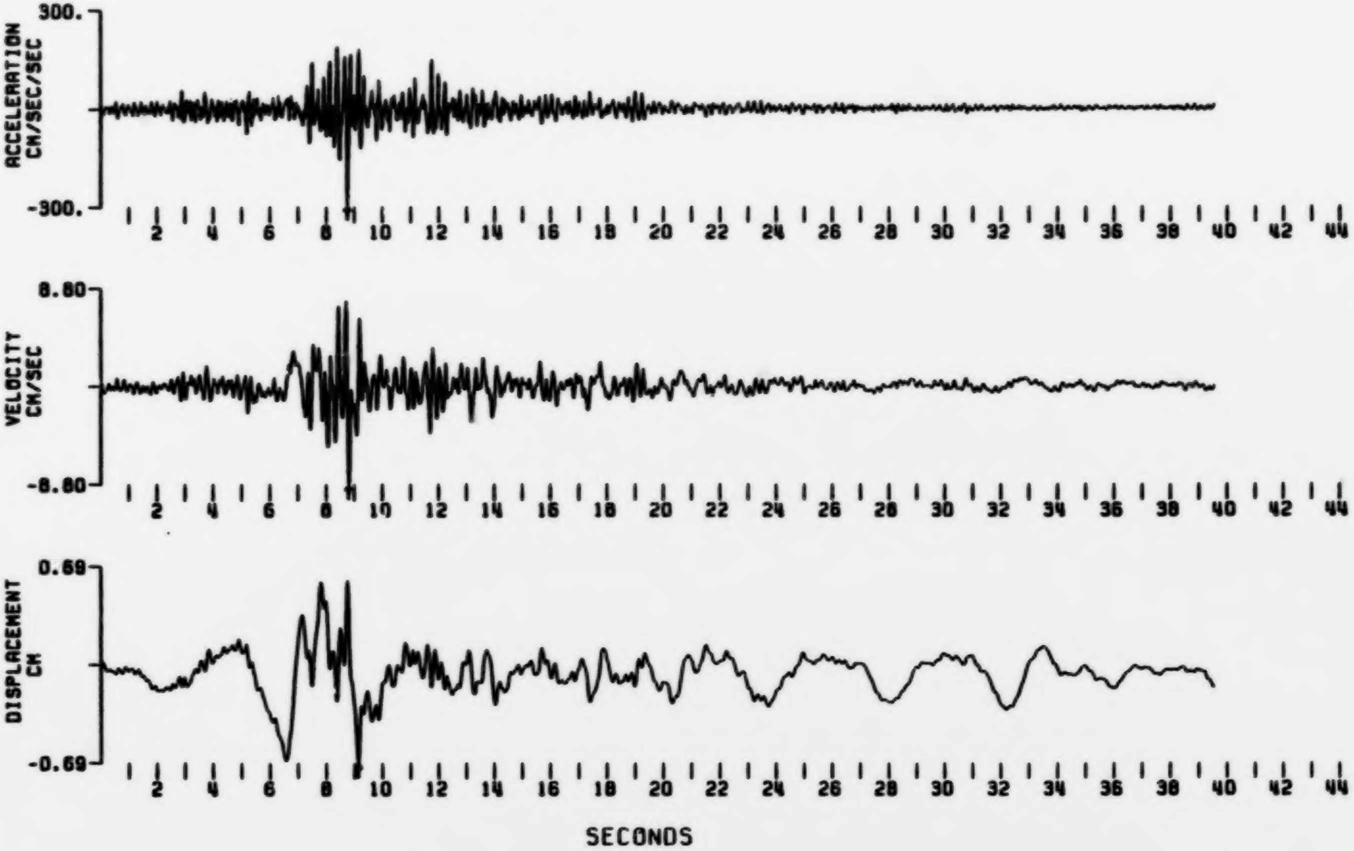
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
VALPARAISO, U.T.F.S.M.
070 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
PEAK VALUES: ACCEL=31.87 CM/SEC/SEC, VELOCITY=-2.46 CM/SEC, DISPL=0.72 CM



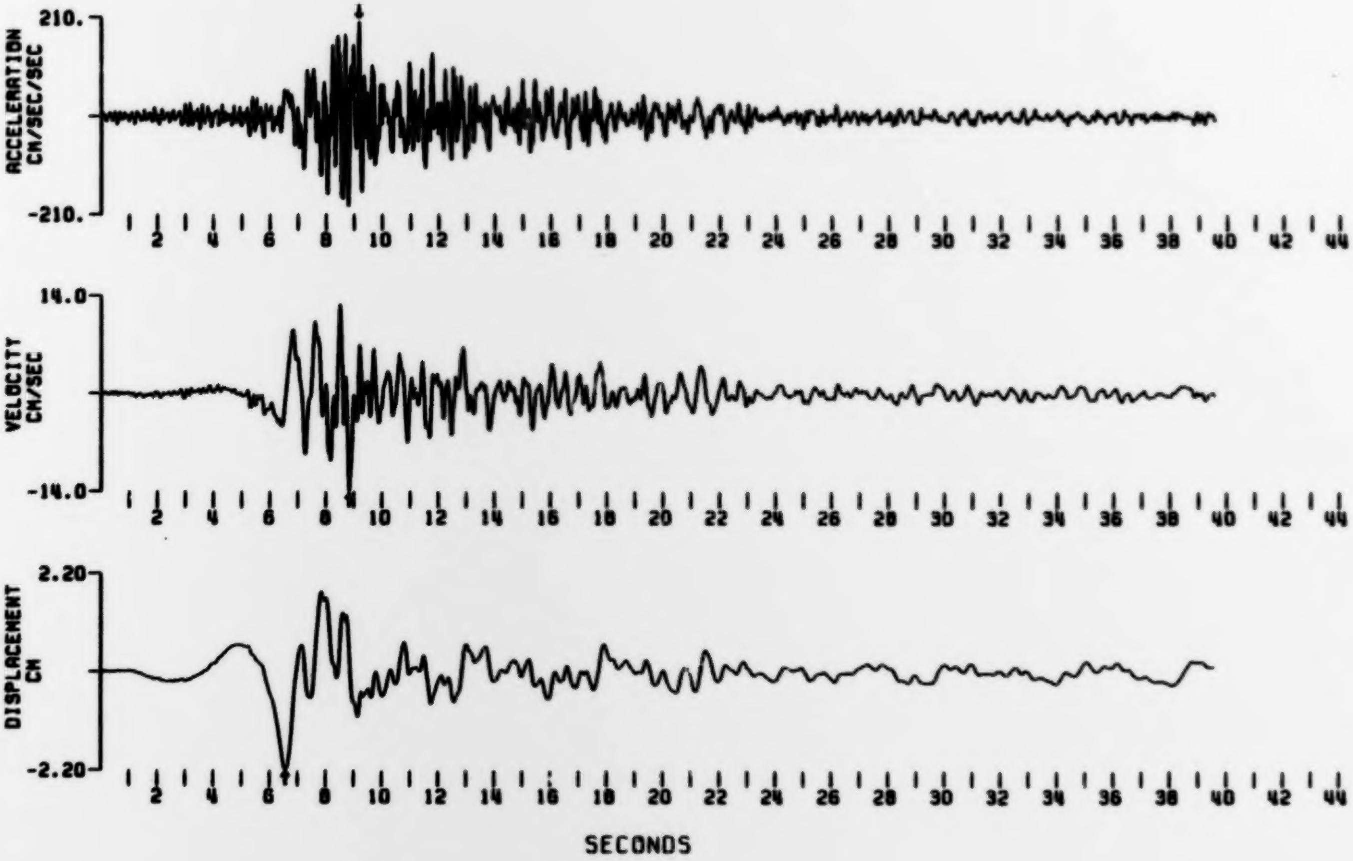
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
LLOLLEO
100 DEGREES
EARTHQUAKE OF APRIL 8, 1985
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-166.89 CM/SEC/SEC, VELOCITY=-6.10 CM/SEC, DISPL=1.09 CM

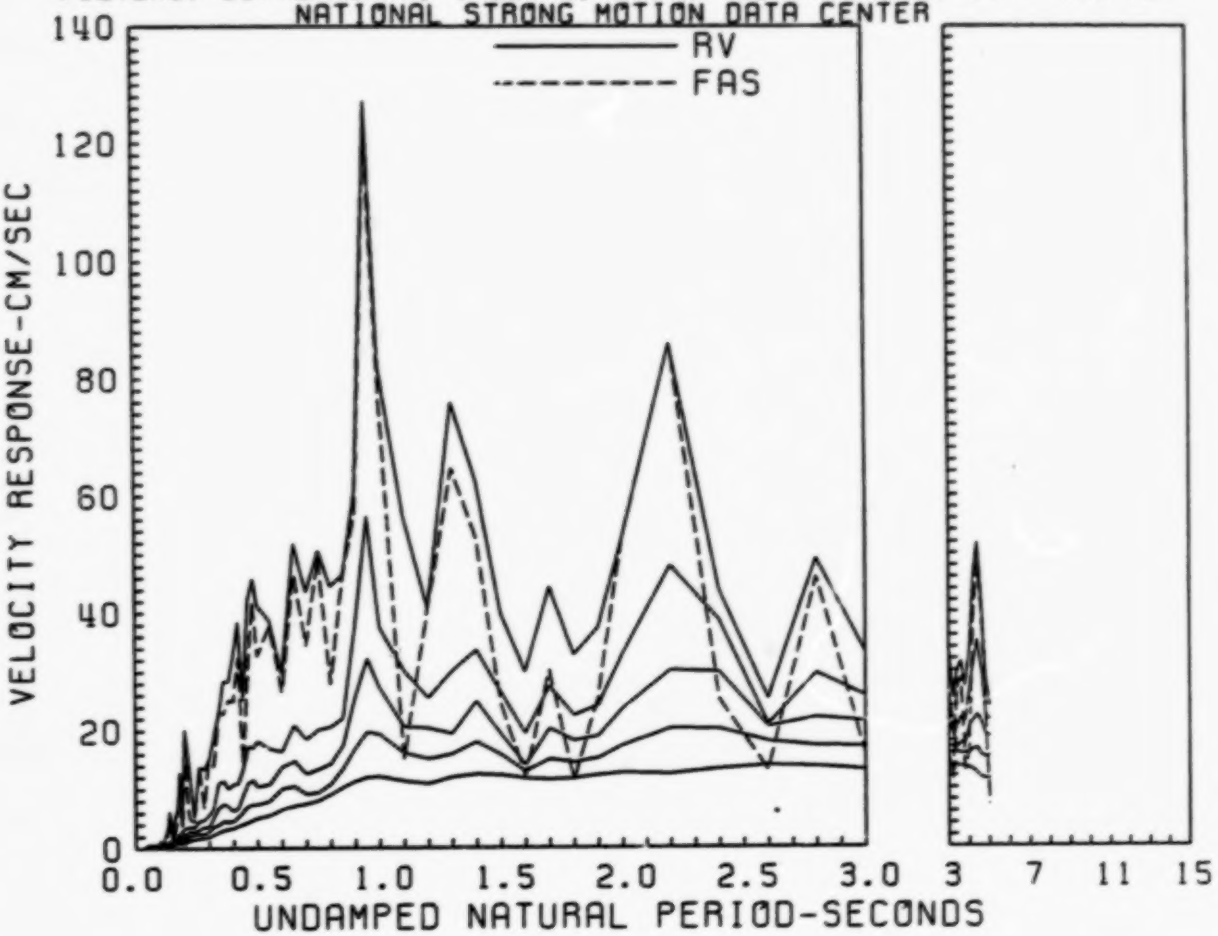


CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
LLOLLEO
UP
EARTHQUAKE OF APRIL 8, 1985
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-292.83 CM/SEC/SEC, VELOCITY=-8.75 CM/SEC, DISPL=-0.68 CM



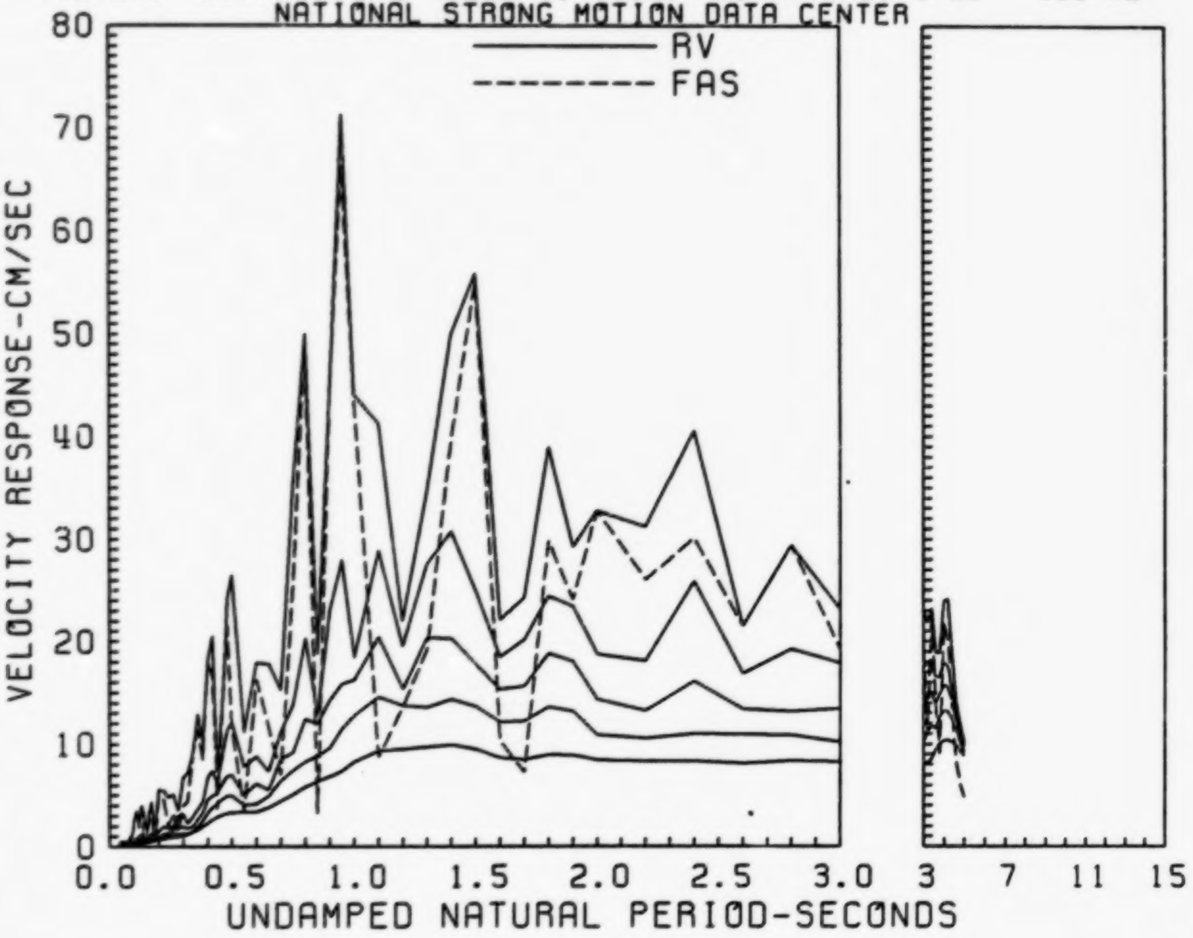
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
LLOLLEO
10 DEGREES
EARTHQUAKE OF APRIL 8, 1985
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=200.02 CM/SEC/SEC, VELOCITY=-13.99 CM/SEC, DISPL=-2.19 CM



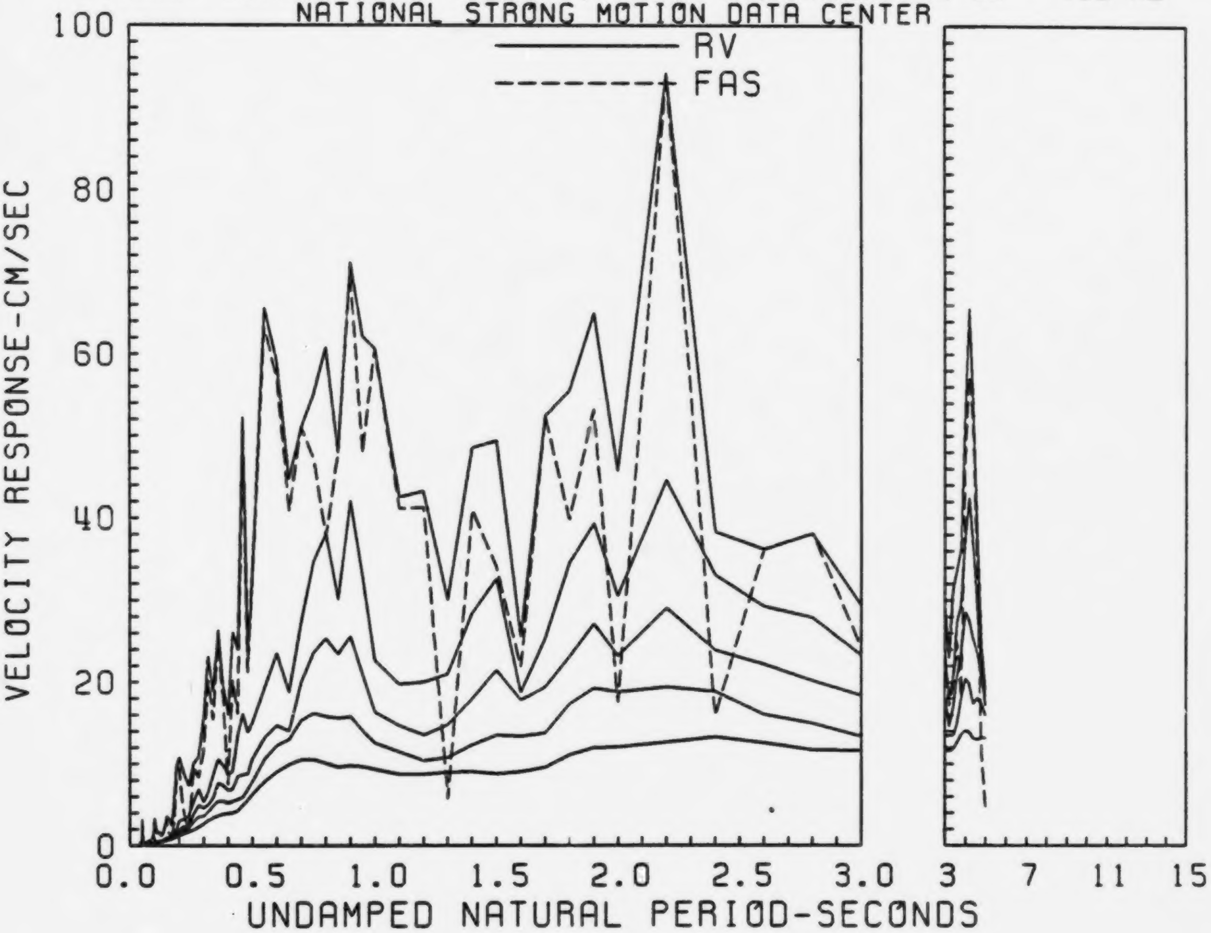


RELATIVE VELOCITY RESPONSE SPECTRUM
CHILLAN INSTITUTE, EARTHQUAKE OF MARCH 3, 1985, 80 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

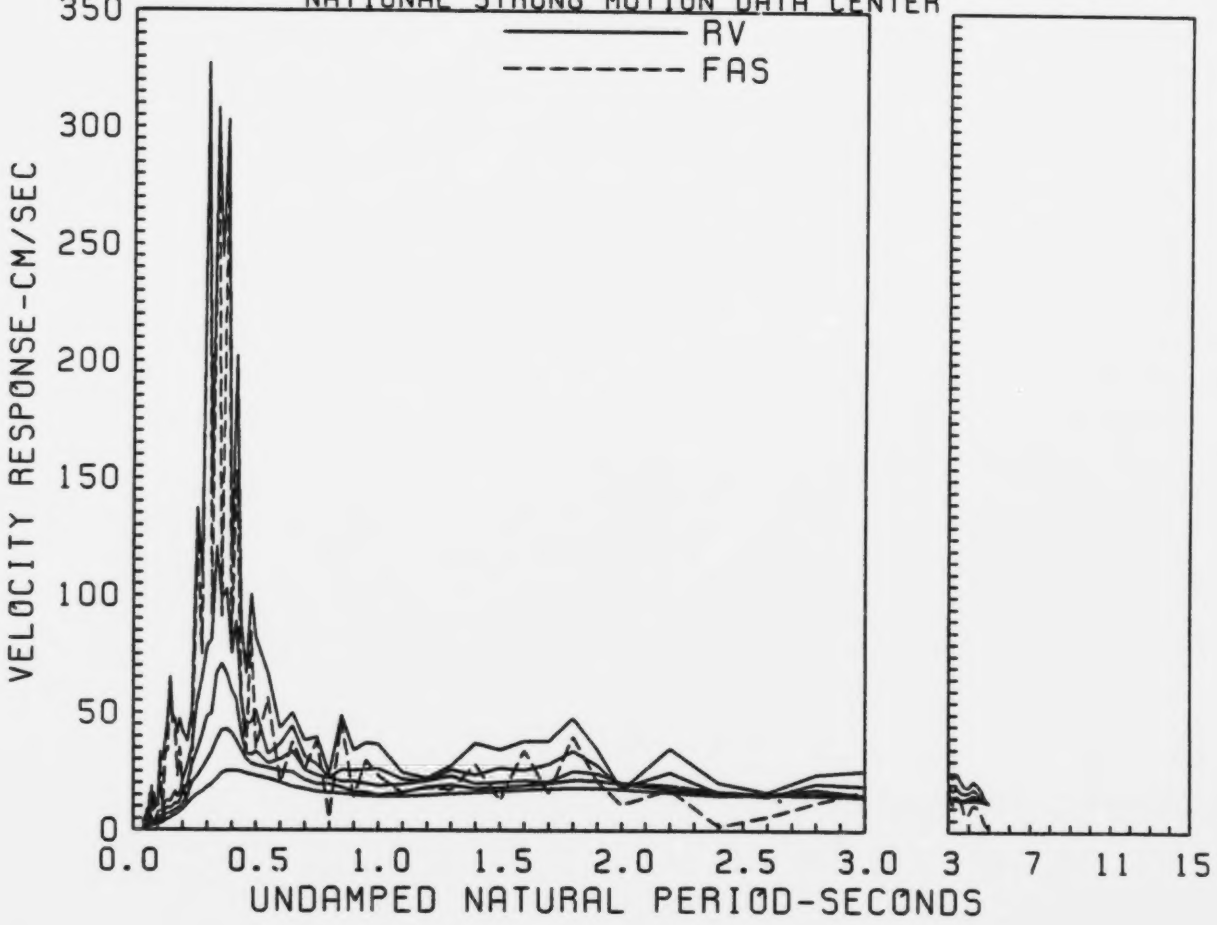
RELATIVE VELOCITY RESPONSE SPECTRUM
CHILLAN INSTITUTE, EARTHQUAKE OF MARCH 3, 1985, UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



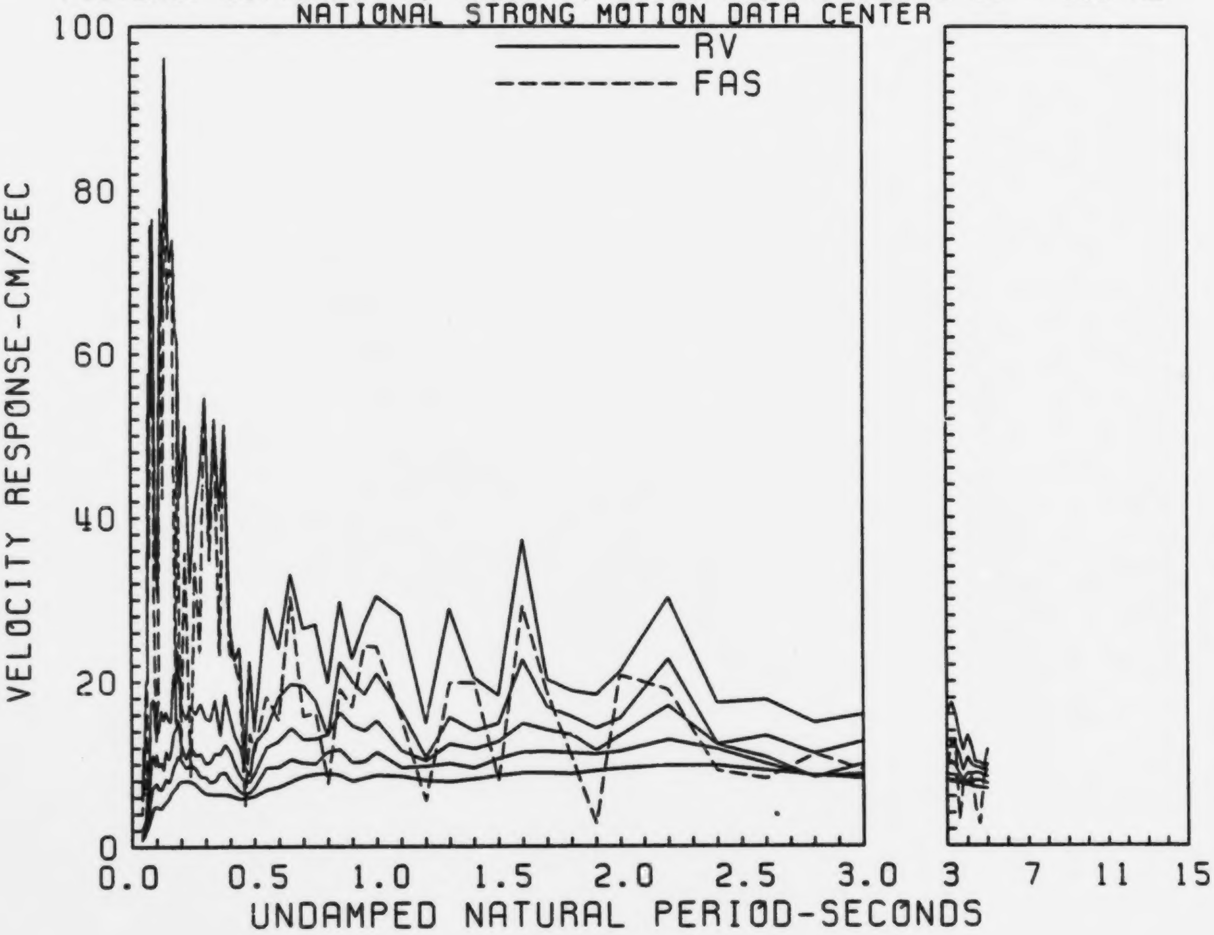
RELATIVE VELOCITY RESPONSE SPECTRUM
CHILLAN INSTITUTE, EARTHQUAKE OF MARCH 3, 1985, 350 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



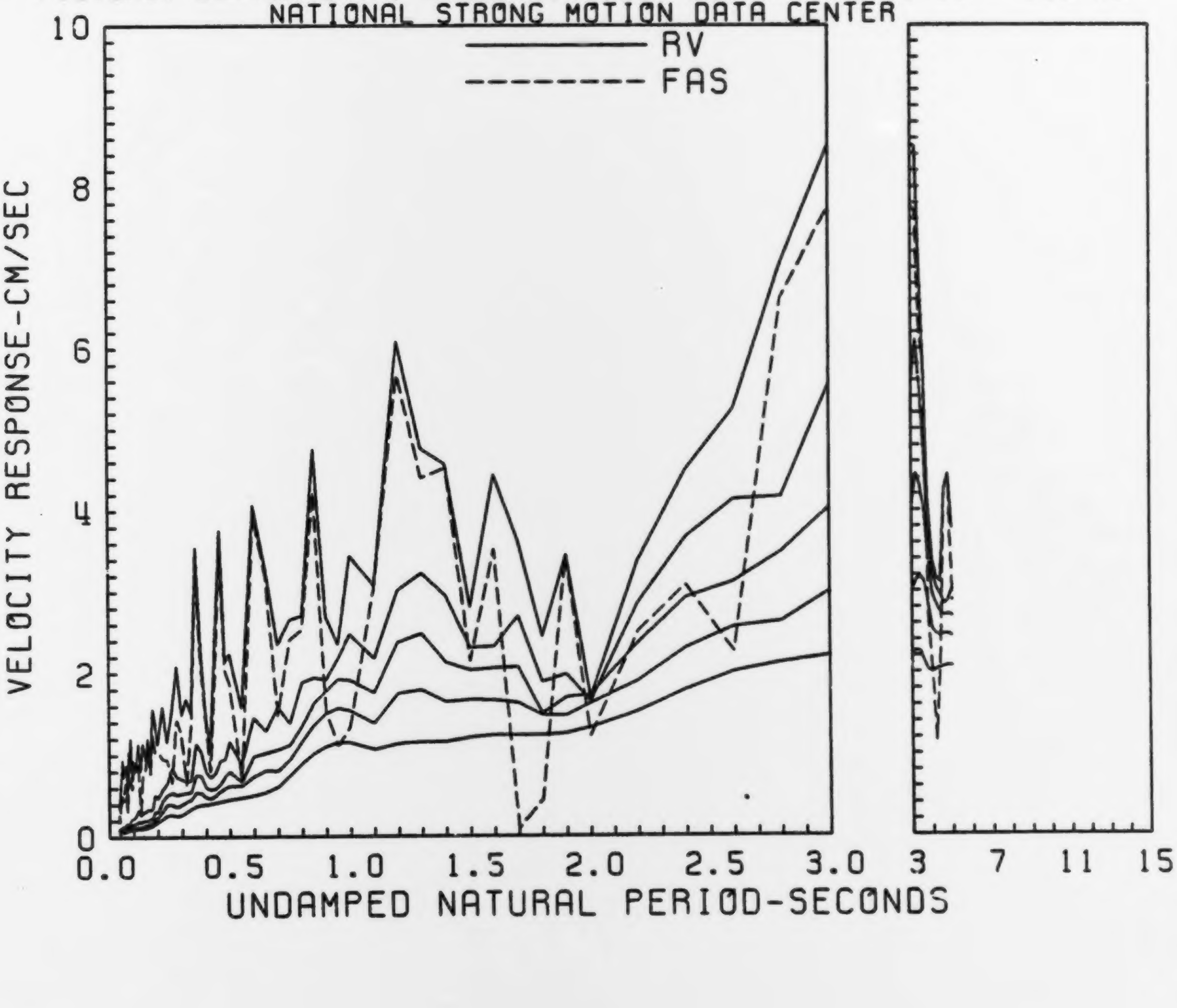
RELATIVE VELOCITY RESPONSE SPECTRUM
PAPUDO, EARTHQUAKE OF MARCH 3, 1985, 050 DEGREES
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



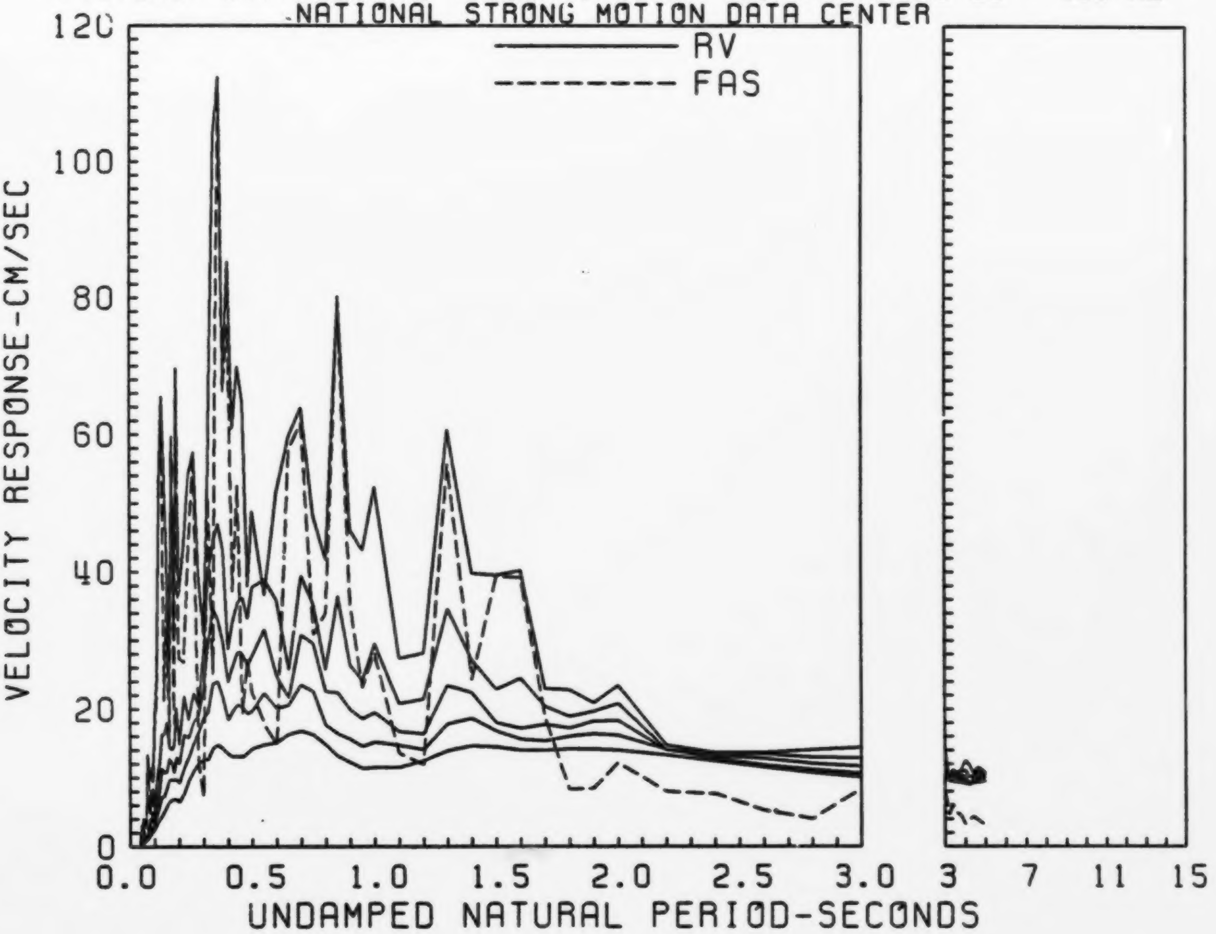
RELATIVE VELOCITY RESPONSE SPECTRUM
PAPUDO, EARTHQUAKE OF MARCH 3, 1985, UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



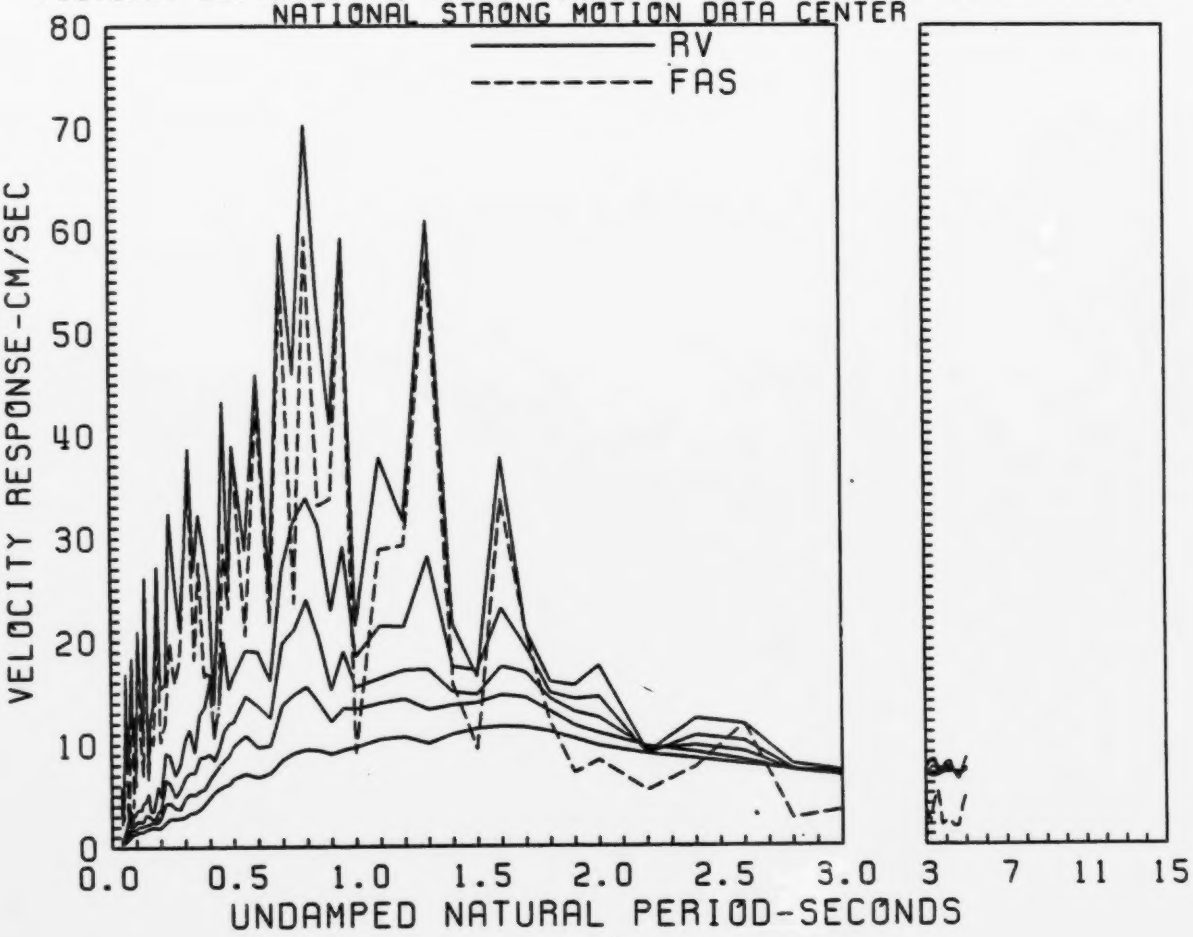
RELATIVE VELOCITY RESPONSE SPECTRUM
PAPUDO, EARTHQUAKE OF MARCH 3, 1985, 140 DEGREES
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



RELATIVE VELOCITY RESPONSE SPECTRUM
TALCA, EARTHQUAKE OF MARCH 3, 1985, 280 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

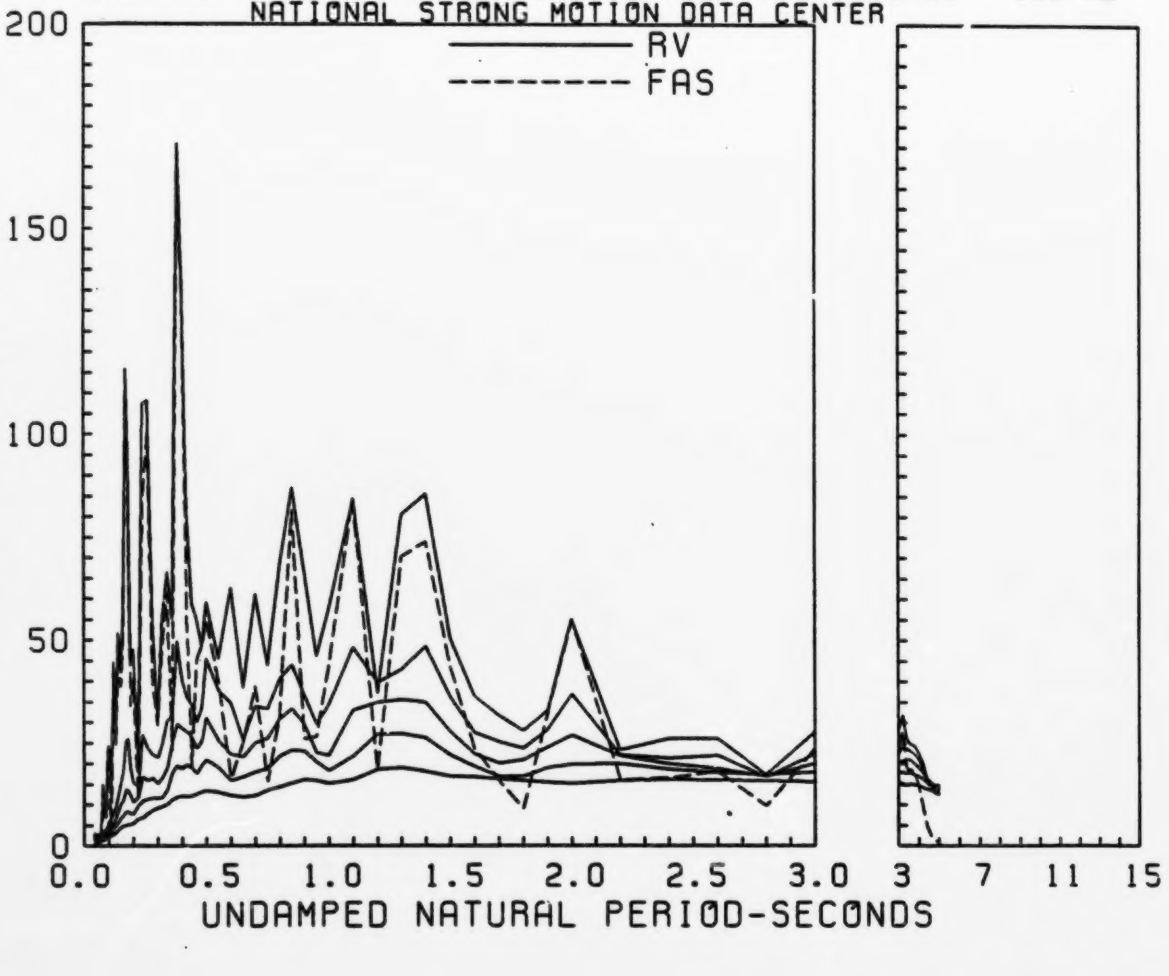


RELATIVE VELOCITY RESPONSE SPECTRUM
TALCA, EARTHQUAKE OF MARCH 3, 1985, UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



RELATIVE VELOCITY RESPONSE SPECTRUM

TALCA, EARTHQUAKE OF MARCH 3, 1985, 010 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



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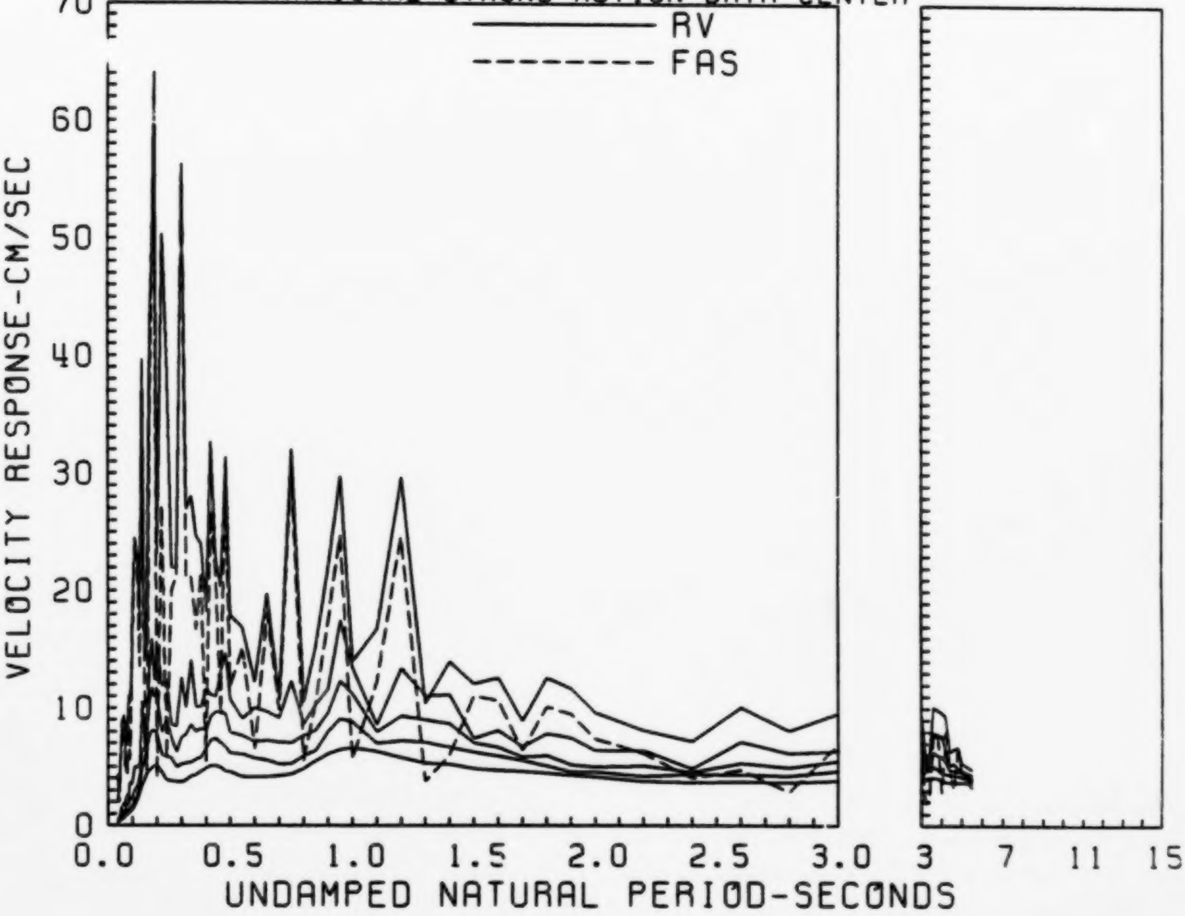
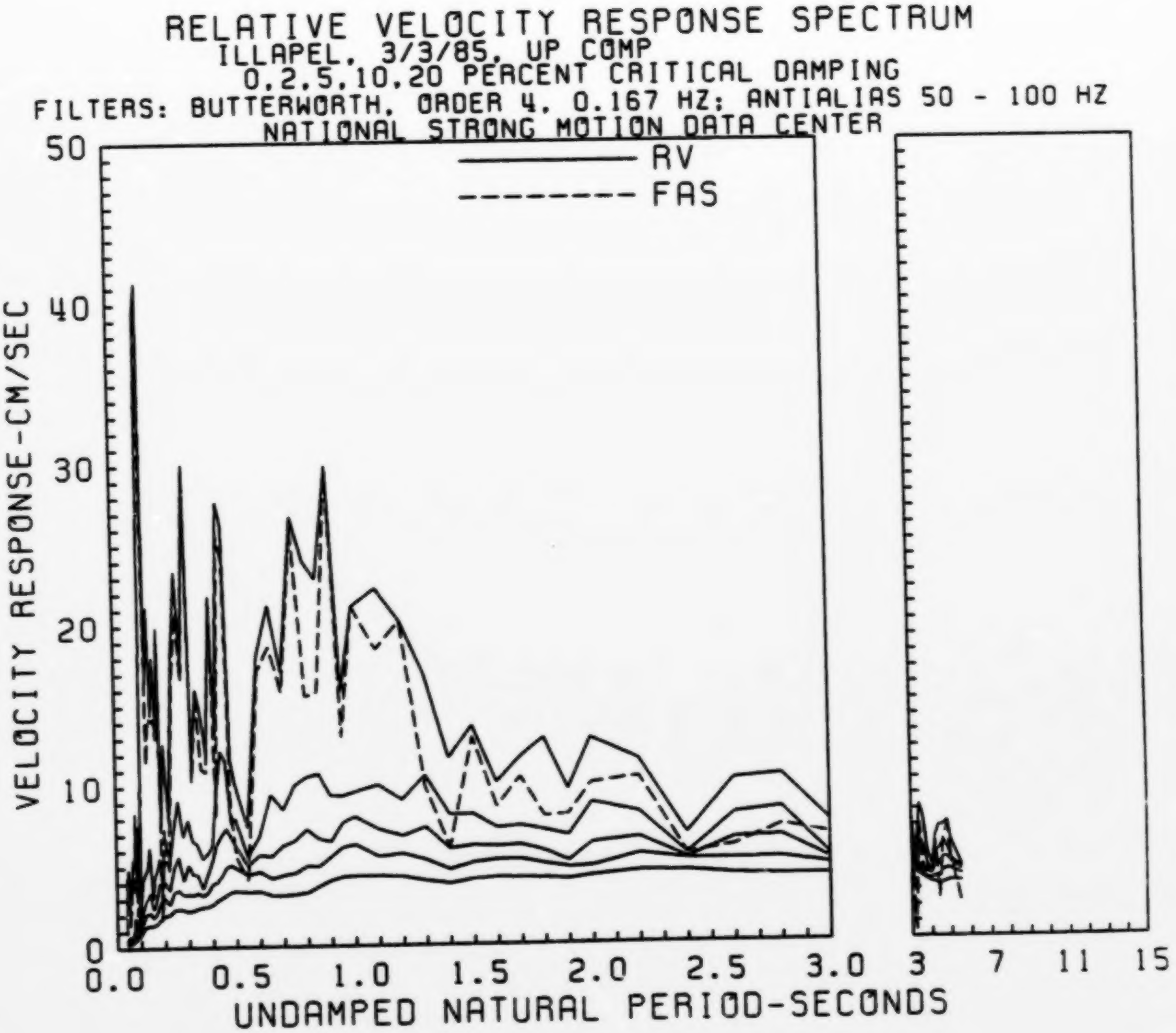
RELATIVE VELOCITY RESPONSE SPECTRUM
ILLAPEL, 3/3/85, 360 DEGREE COMP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER





RELATIVE VELOCITY RESPONSE SPECTRUM
ILLAPEL, 3/3/85, UP COMP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

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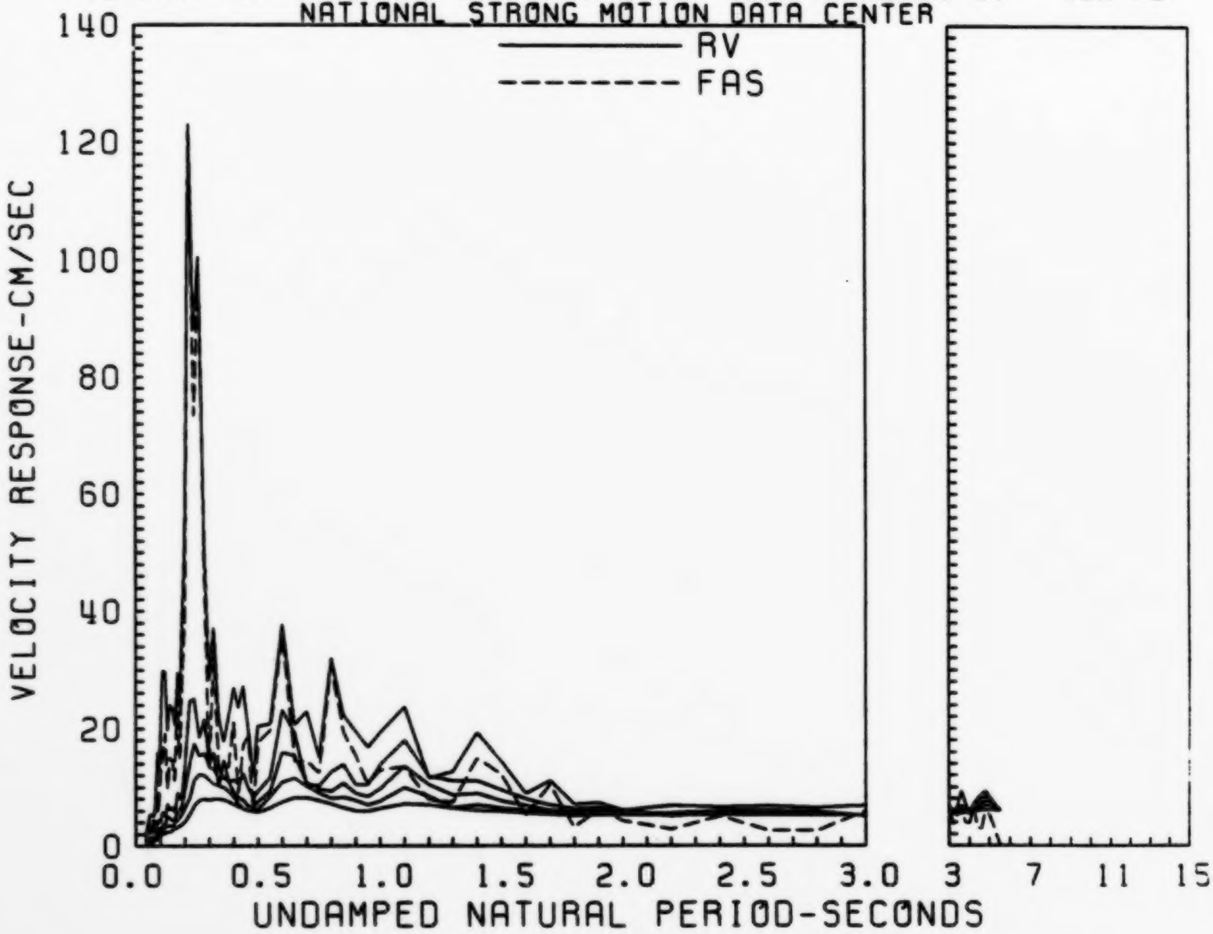
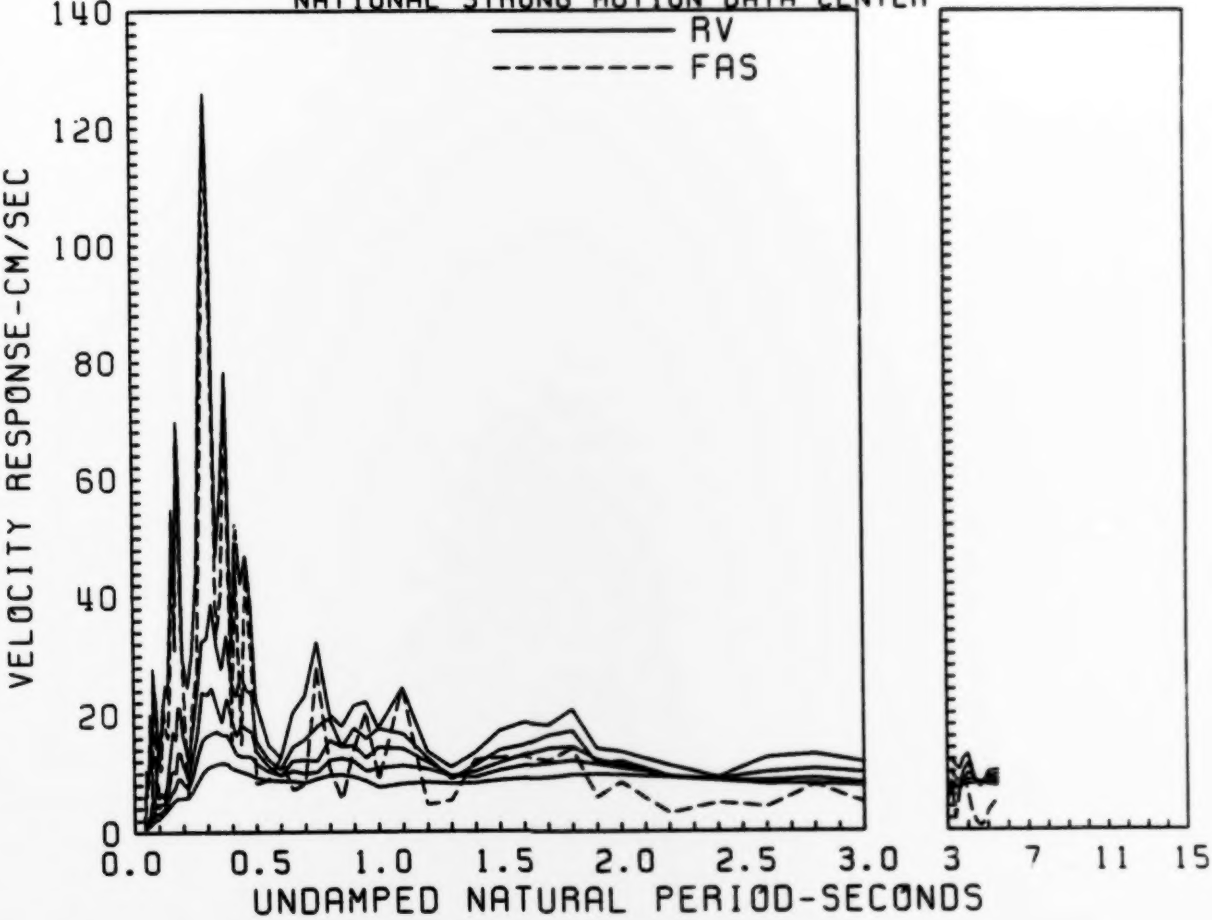
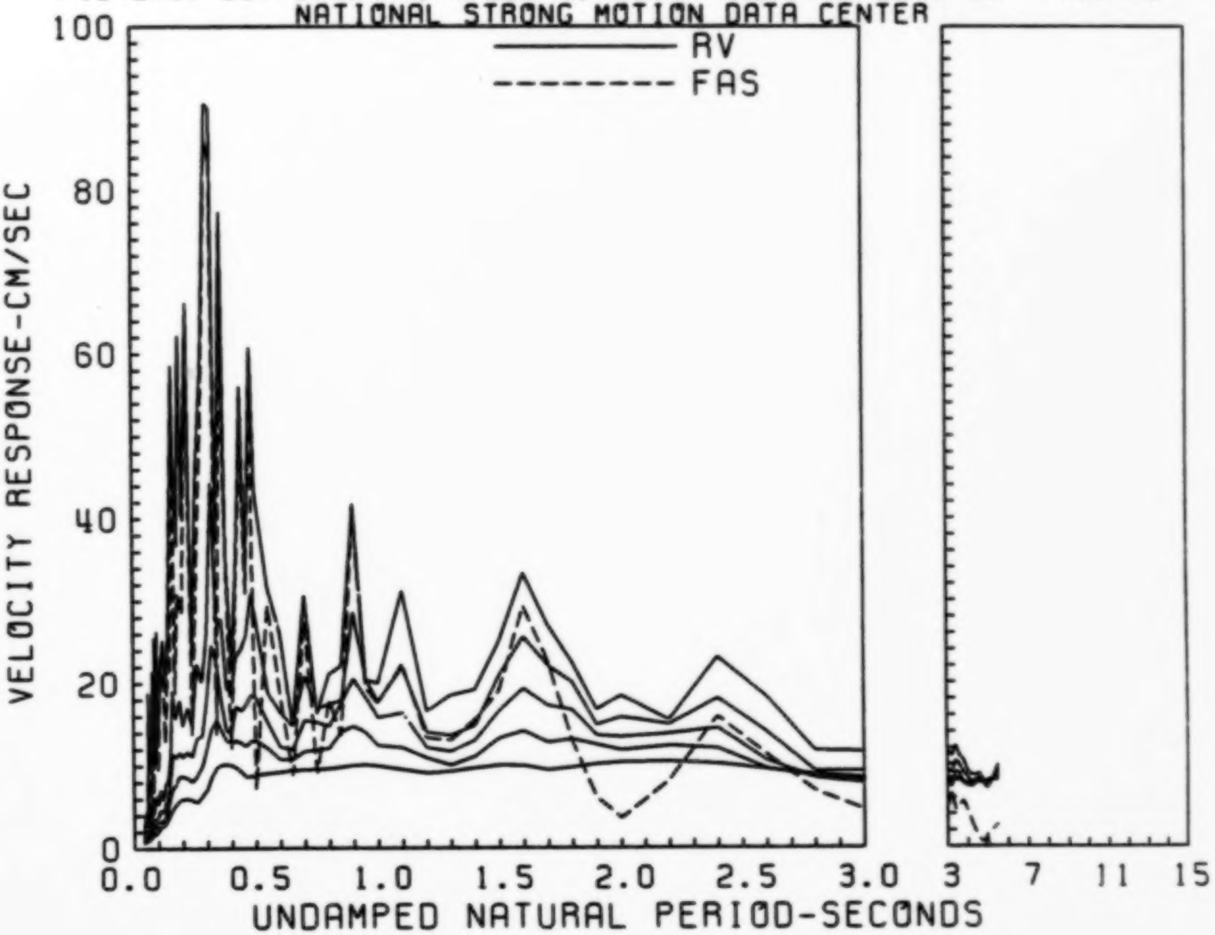
RELATIVE VELOCITY RESPONSE SPECTRUM
ILLAPEL. 3/3/85. 090 DEGREE COMP
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH. ORDER 4. 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



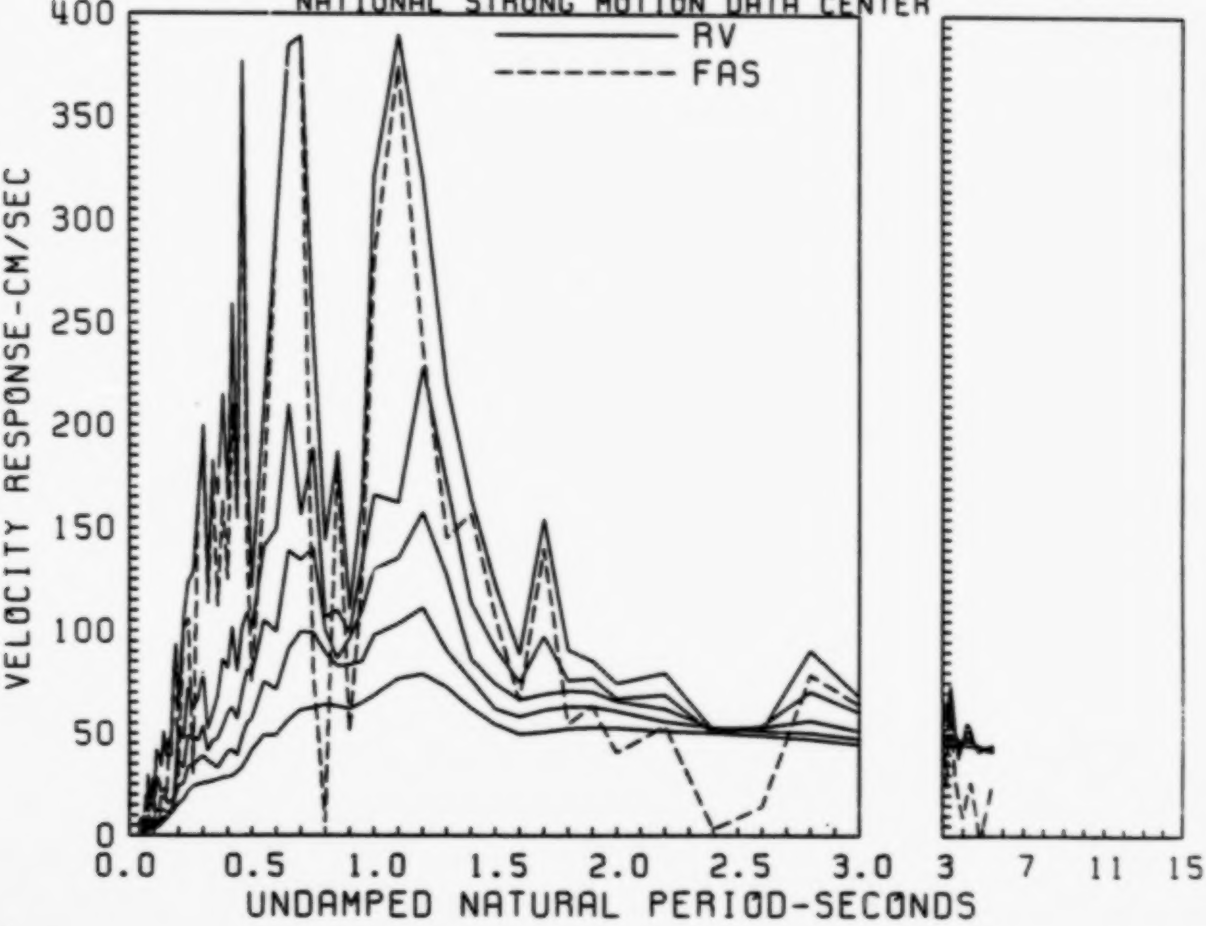


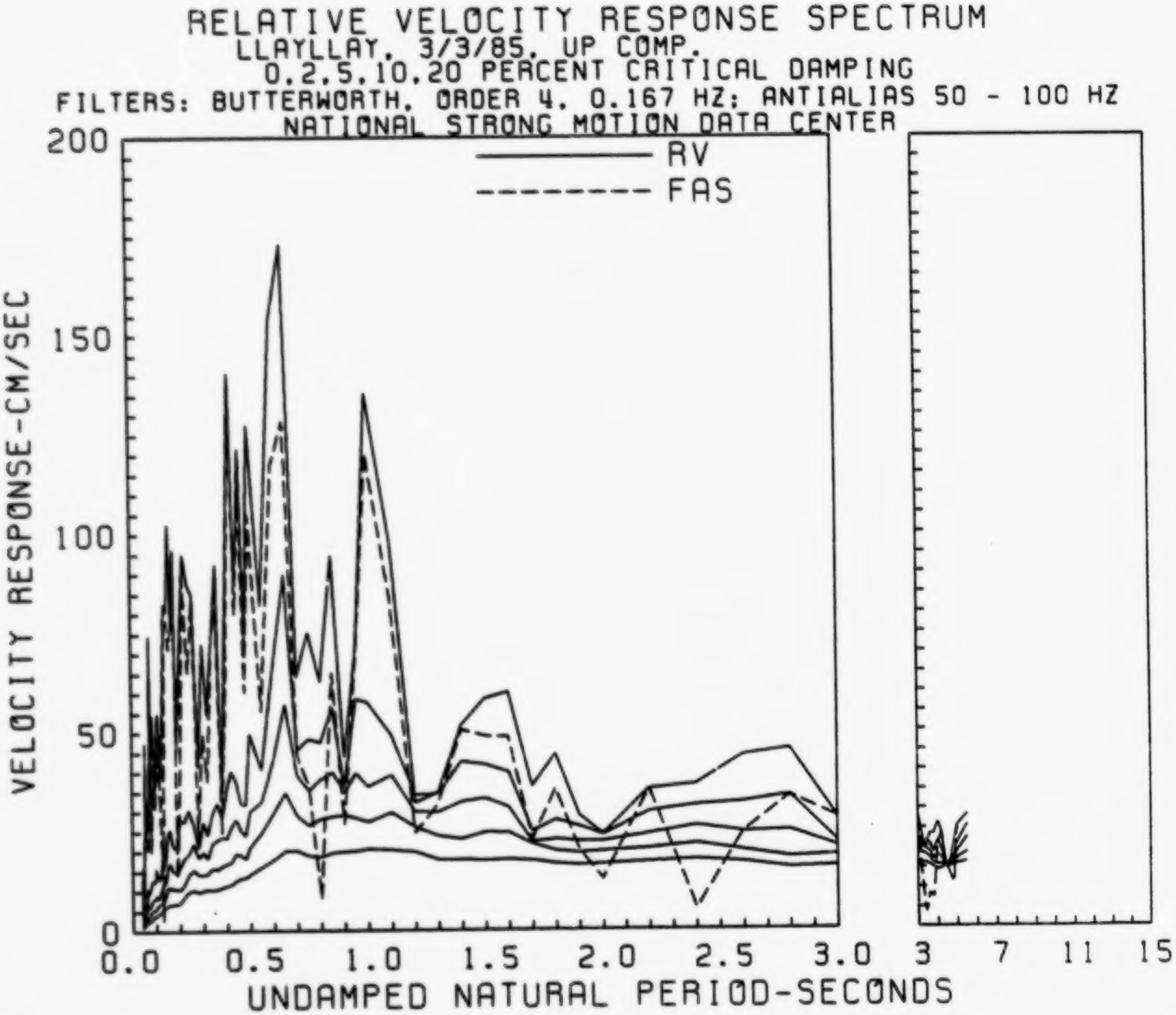
RELATIVE VELOCITY RESPONSE SPECTRUM
LALIGUA, 3/3/86, 360 DEGREE COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

RELATIVE VELOCITY RESPONSE SPECTRUM
LALIGUA, 3/3/86, UP COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

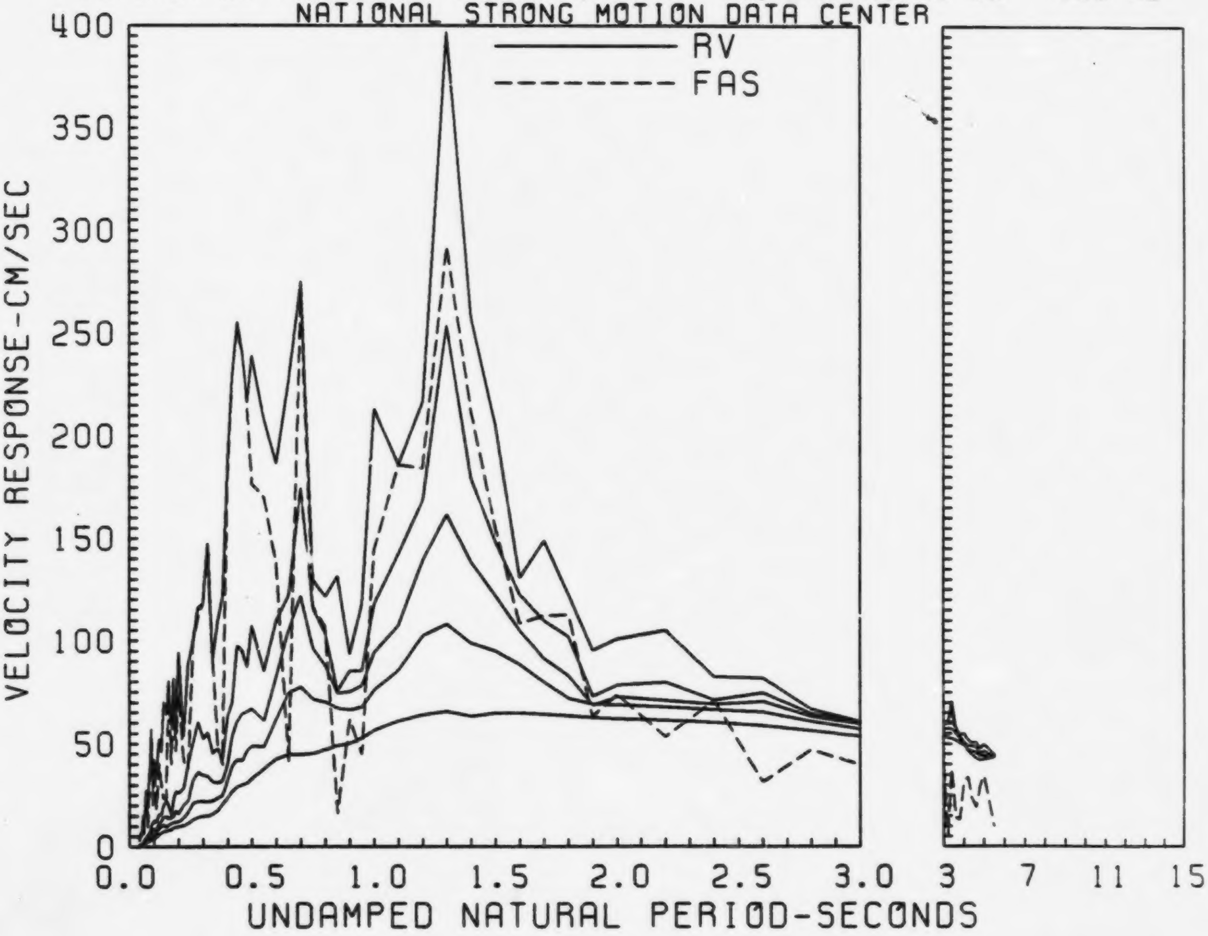


RELATIVE VELOCITY RESPONSE SPECTRUM
LLAYLLAY, 3/3/85, 360 DEGREE COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



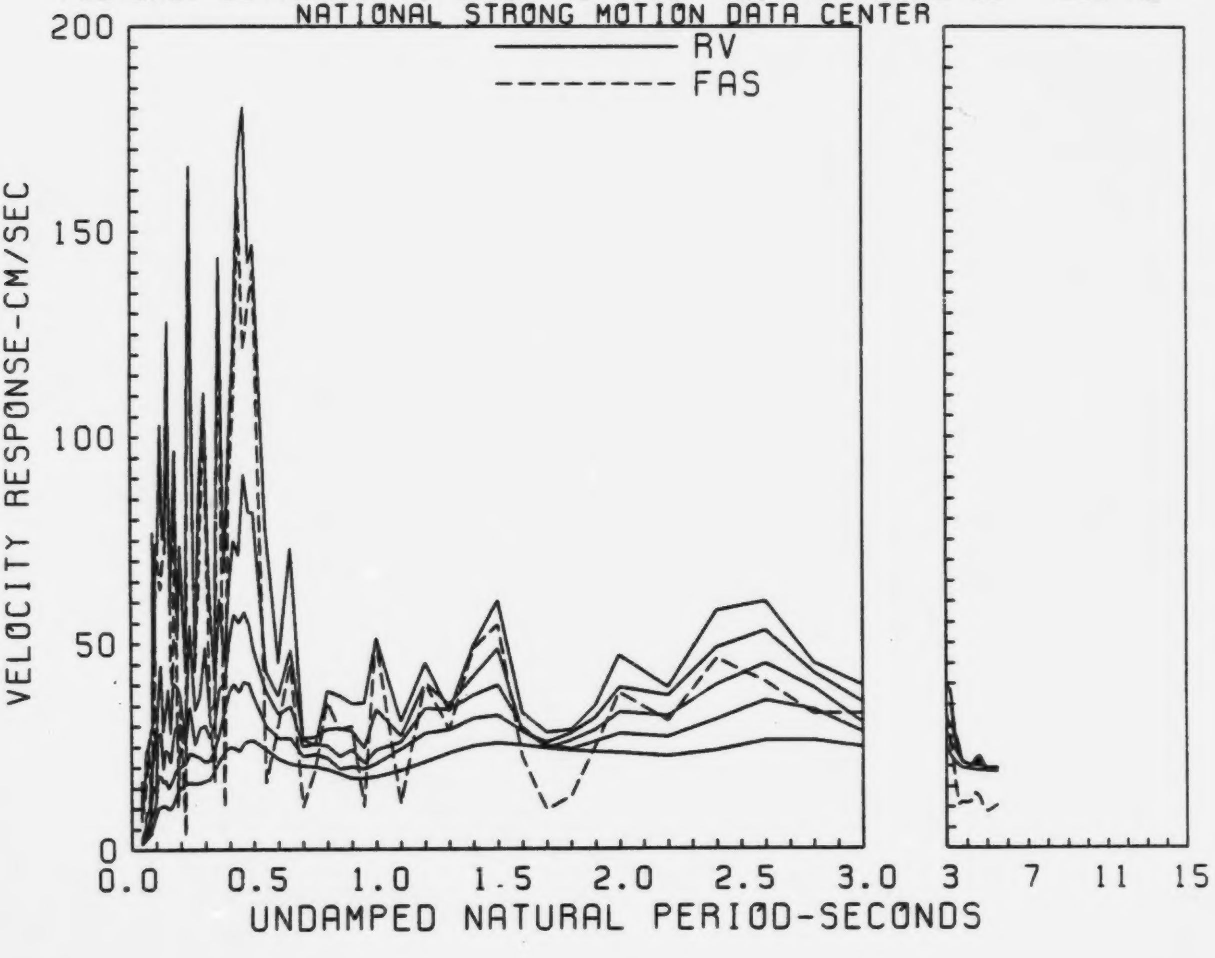


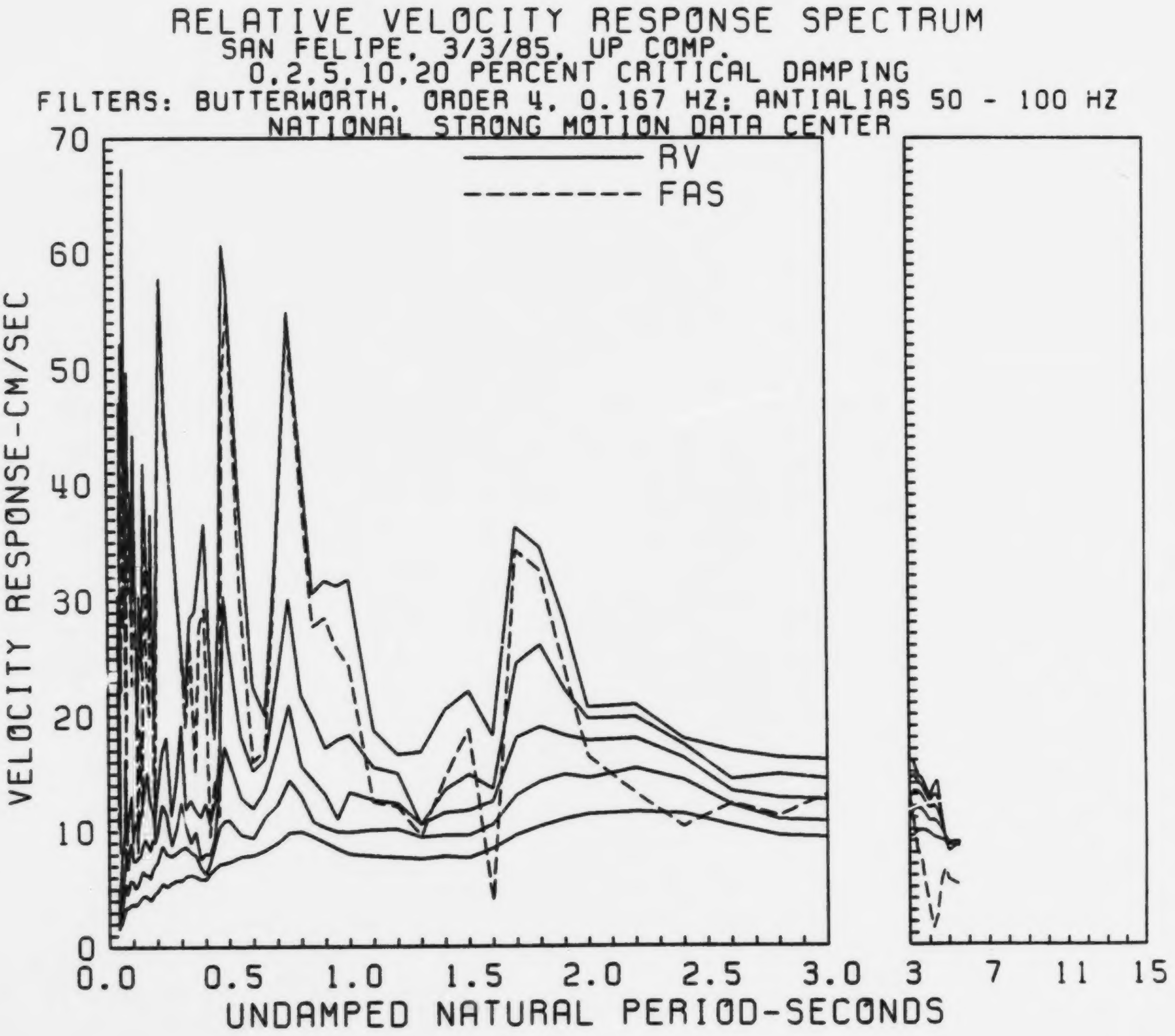
RELATIVE VELOCITY RESPONSE SPECTRUM
LLAYLLAY, 3/3/85, UP COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



RELATIVE VELOCITY RESPONSE SPECTRUM
LLAYLLAY, 3/3/85, 090 DEGREE COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

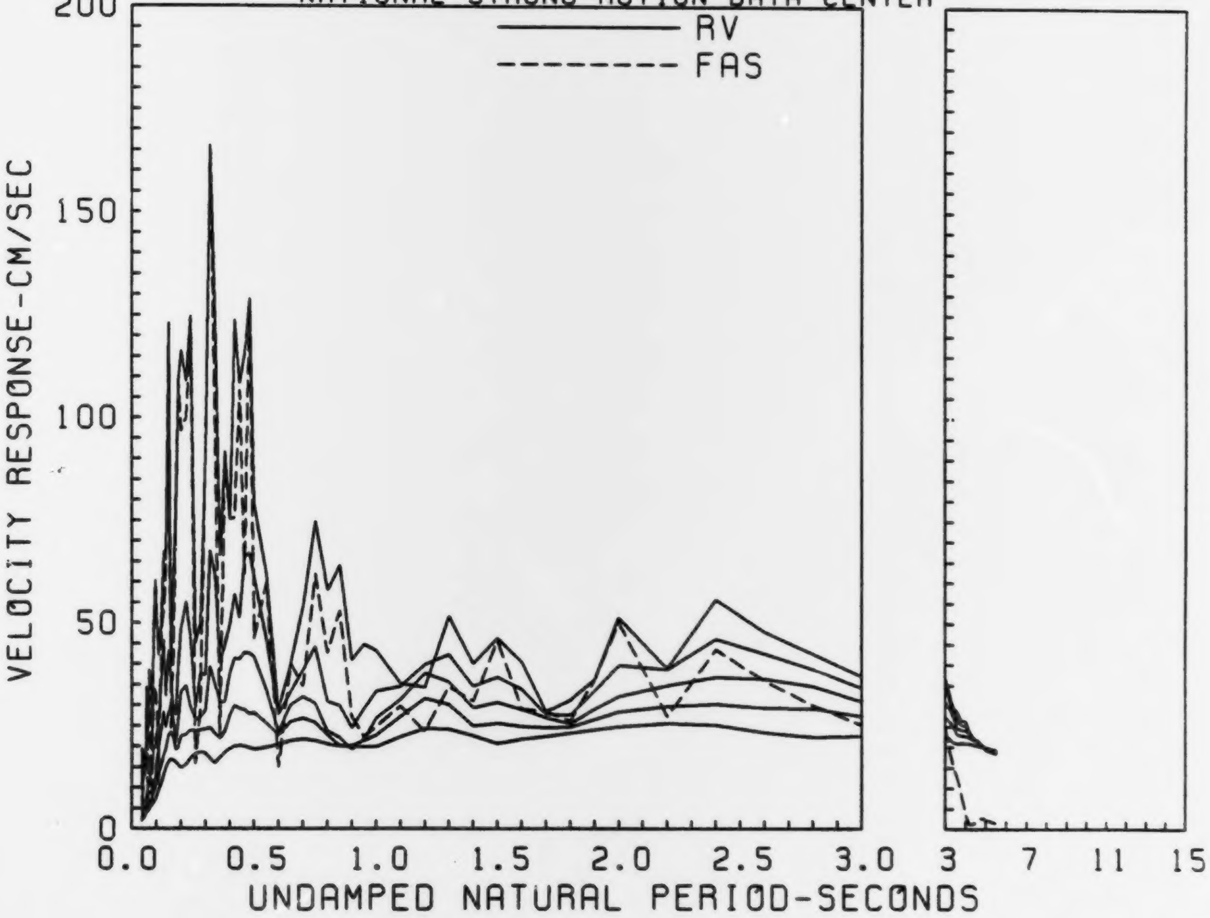
RELATIVE VELOCITY RESPONSE SPECTRUM
SAN FELIPE, 3/3/85, 360 DEGREE COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



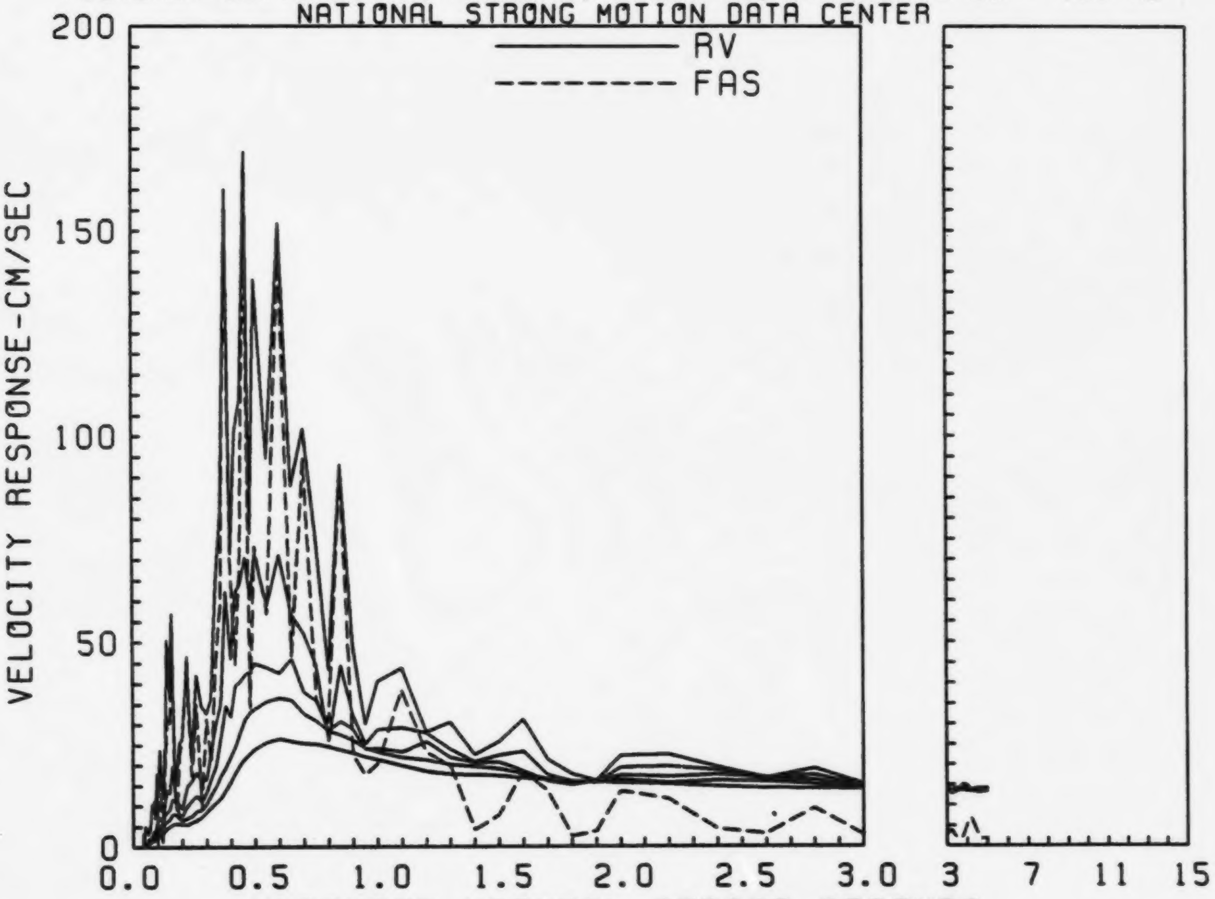


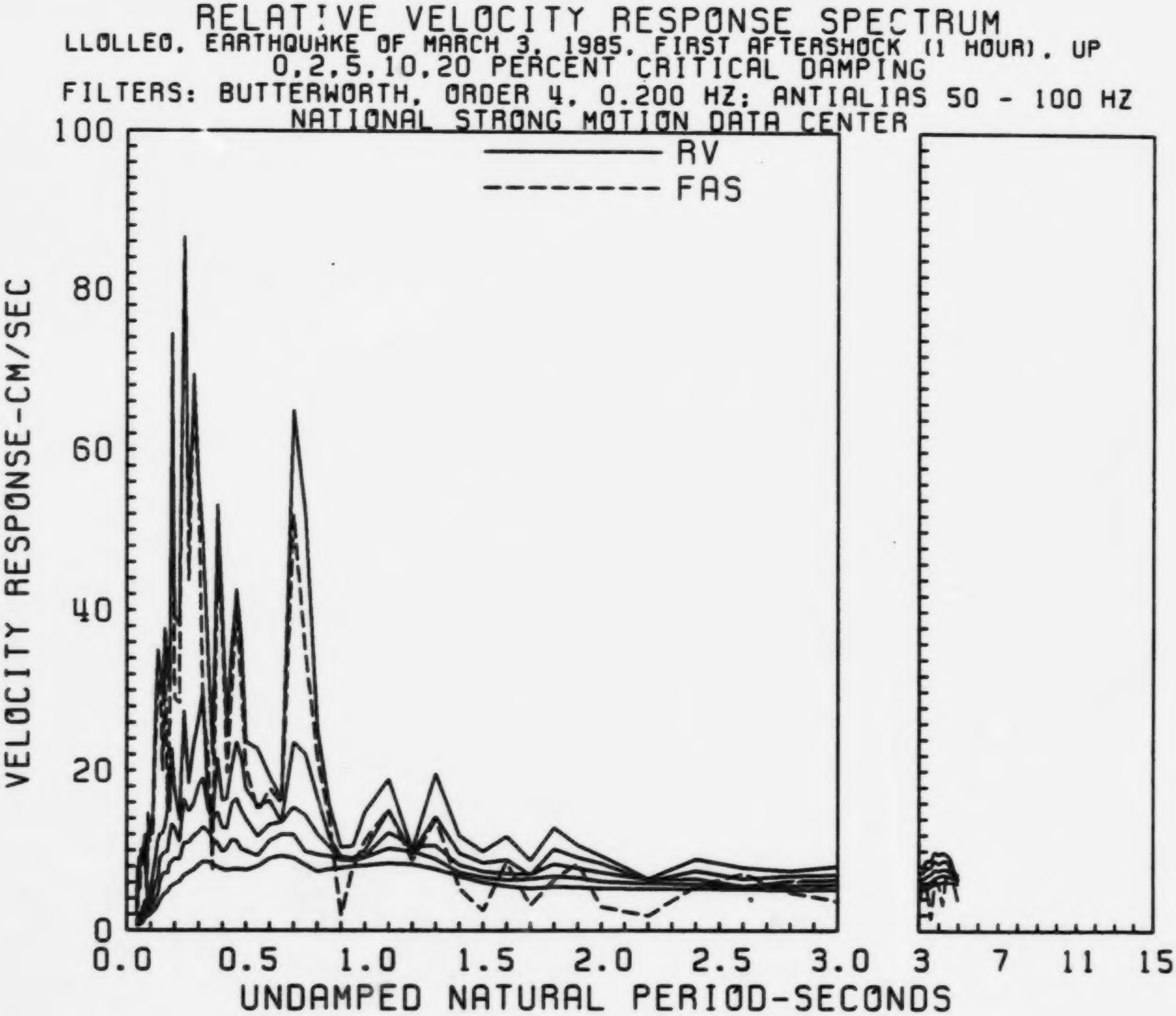
RELATIVE VELOCITY RESPONSE SPECTRUM
SAN FELIPE, 3/3/85, UP COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

RELATIVE VELOCITY RESPONSE SPECTRUM
SAN FELIPE, 3/3/85, 090 DEGREE COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



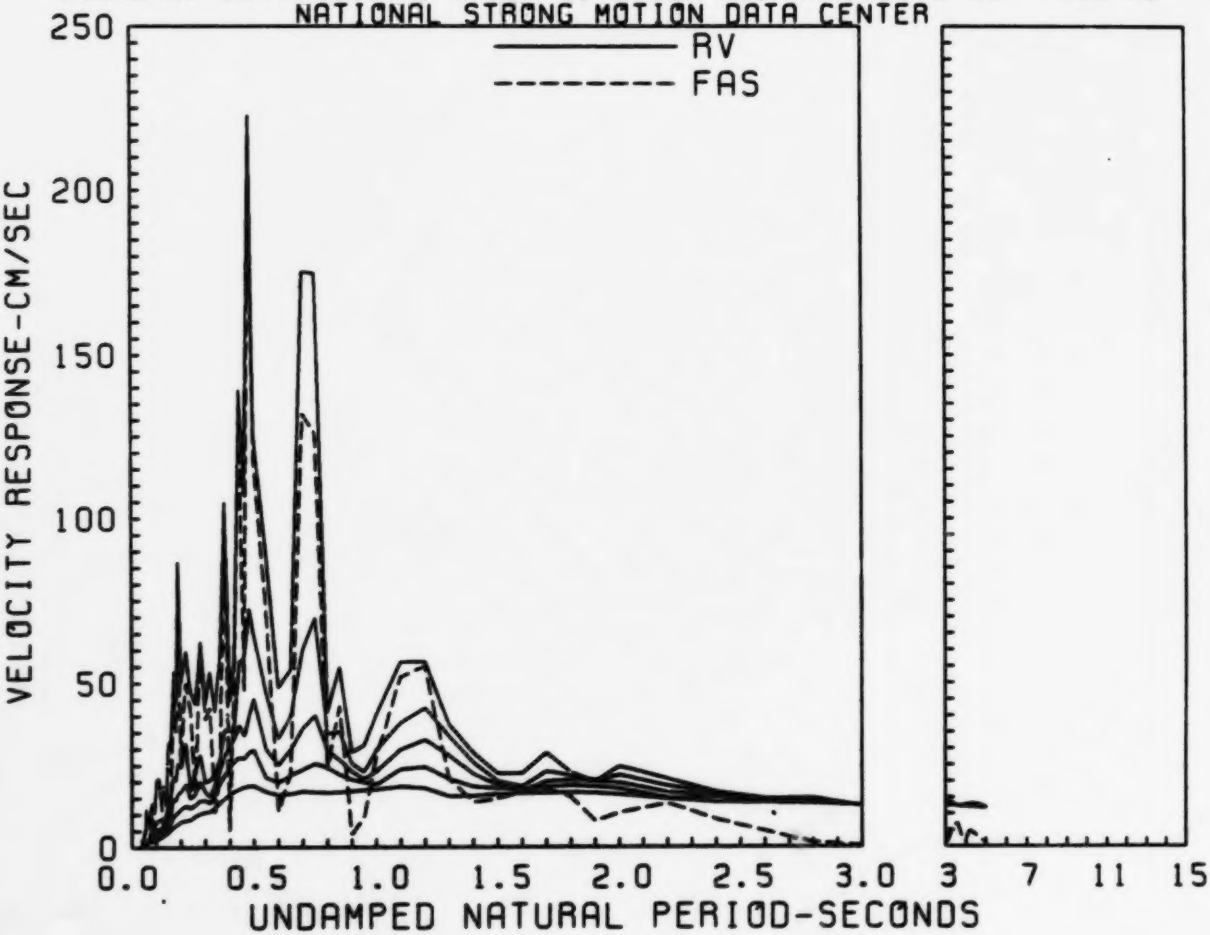
RELATIVE VELOCITY RESPONSE SPECTRUM
LLOLLEO, EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR), 100
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

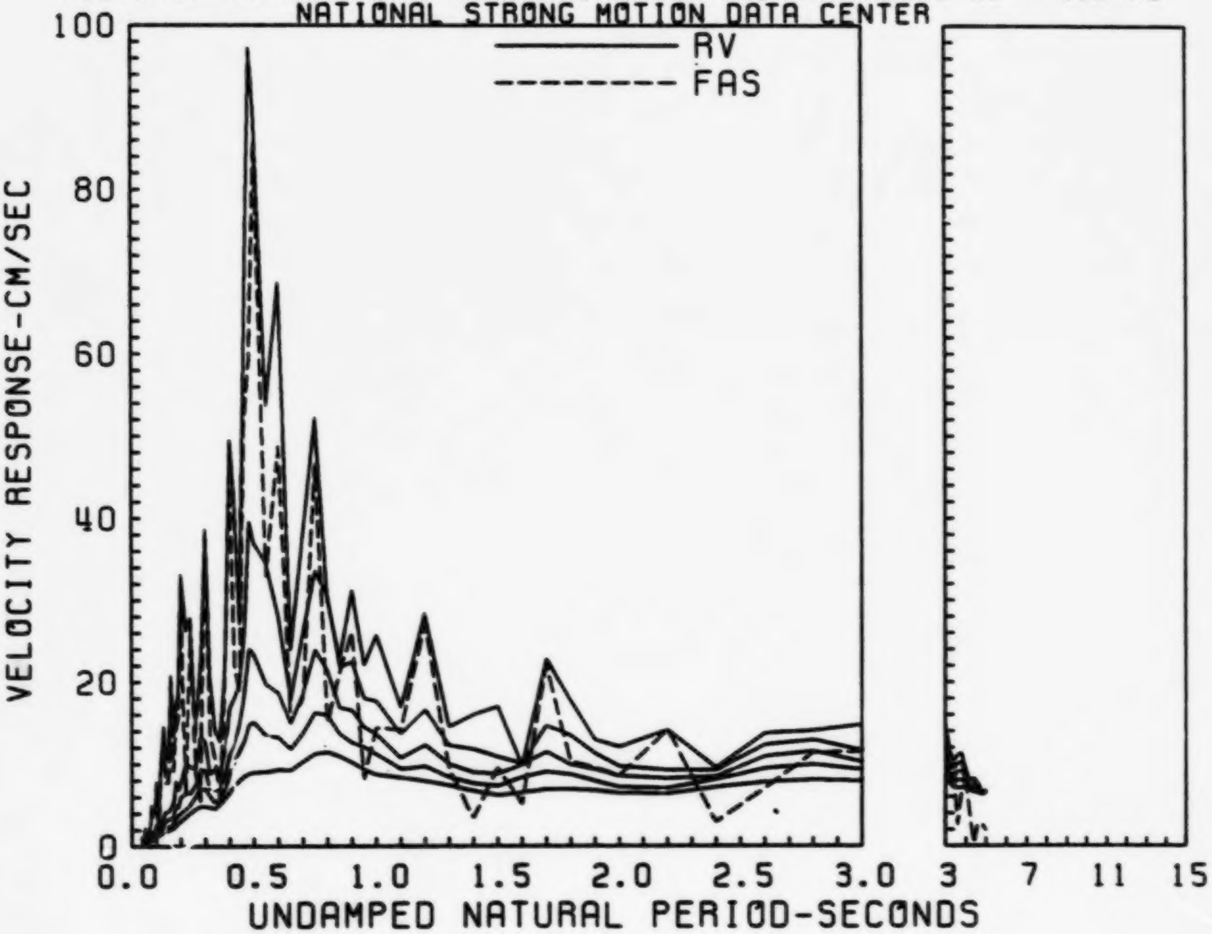




RELATIVE VELOCITY RESPONSE SPECTRUM
LLOLLEO, EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR), UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

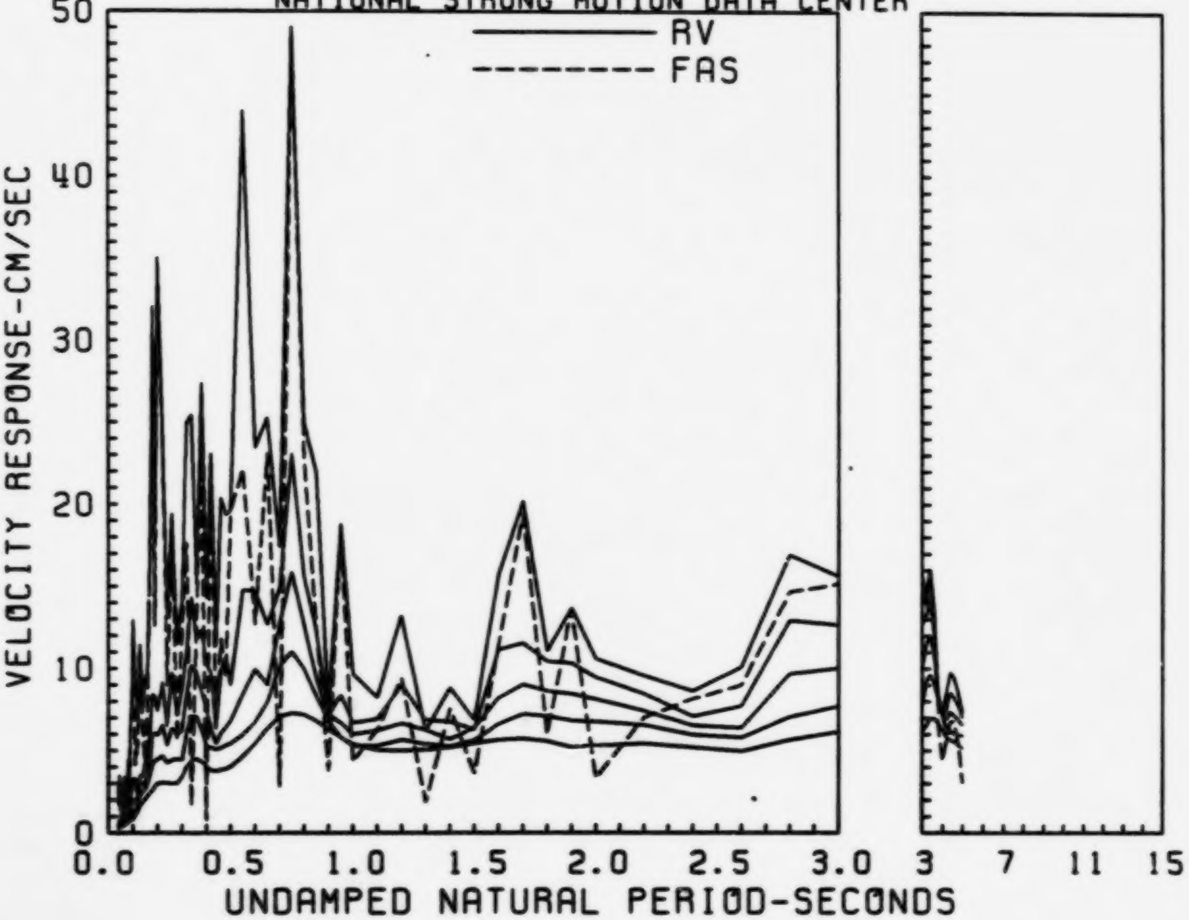
RELATIVE VELOCITY RESPONSE SPECTRUM
LLOLLEO, EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR), 010
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



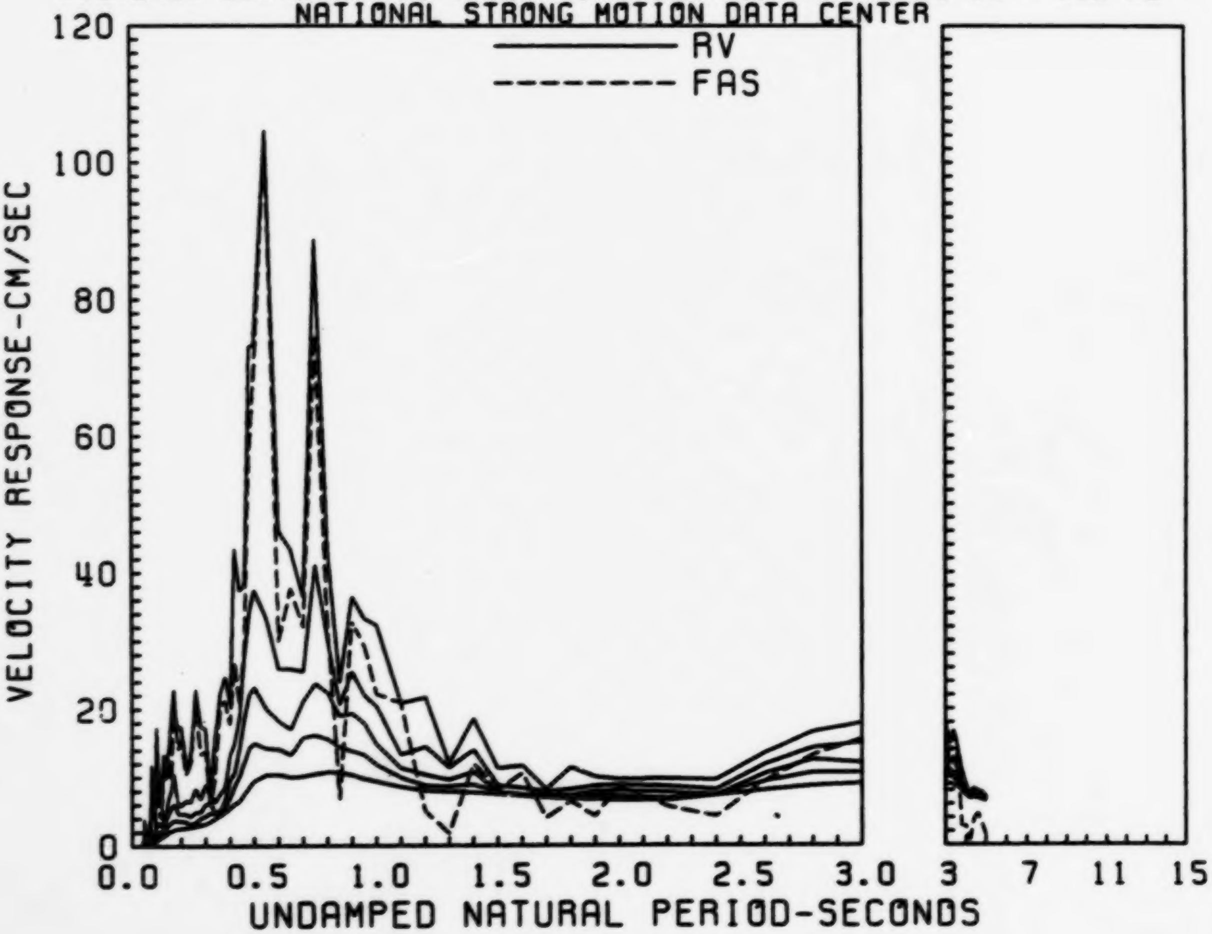


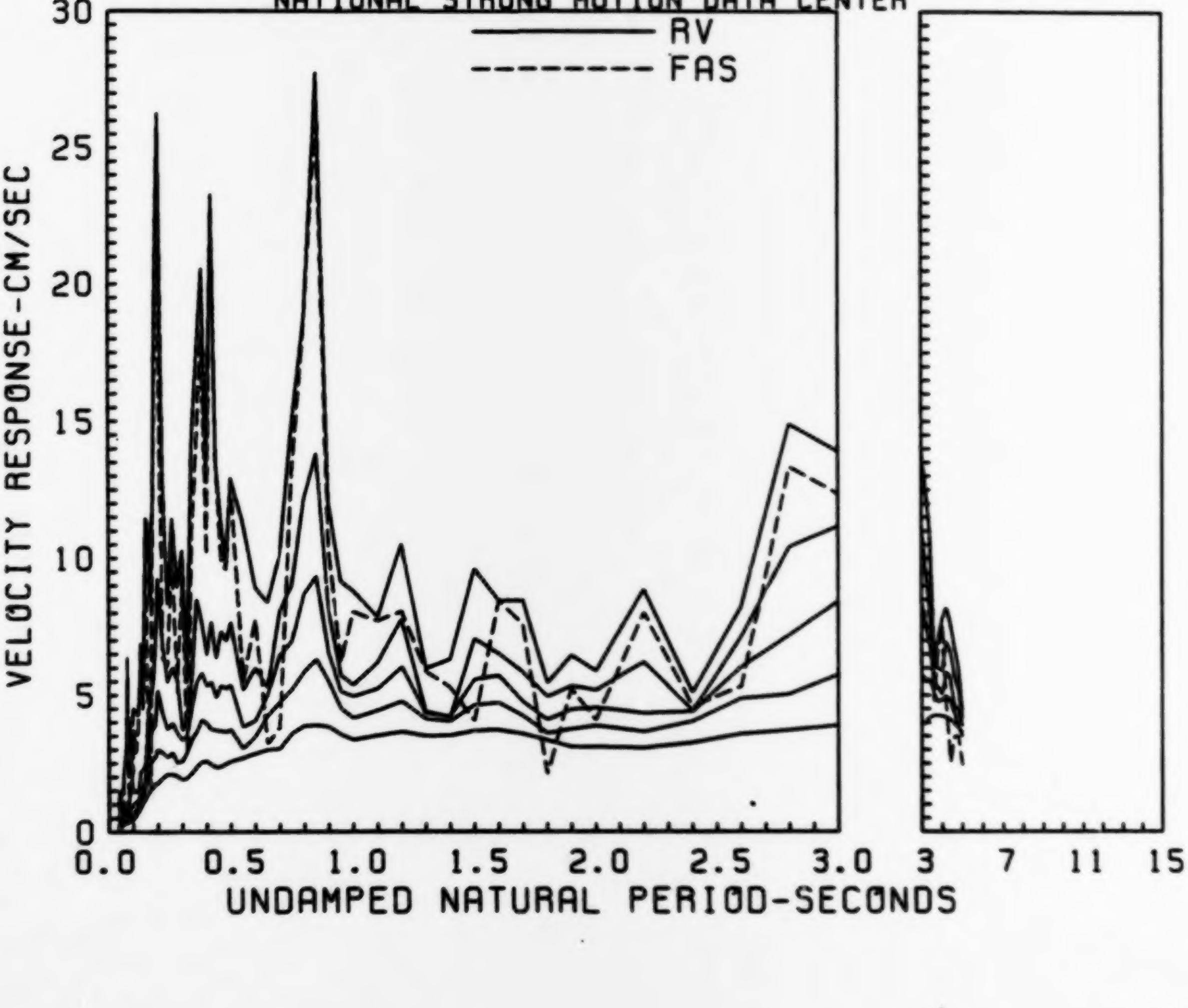
RELATIVE VELOCITY RESPONSE SPECTRUM
VINA DEL MAR, EQ OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR), 290 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

RELATIVE VELOCITY RESPONSE SPECTRUM
VINA DEL MAR, EQ OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR), UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

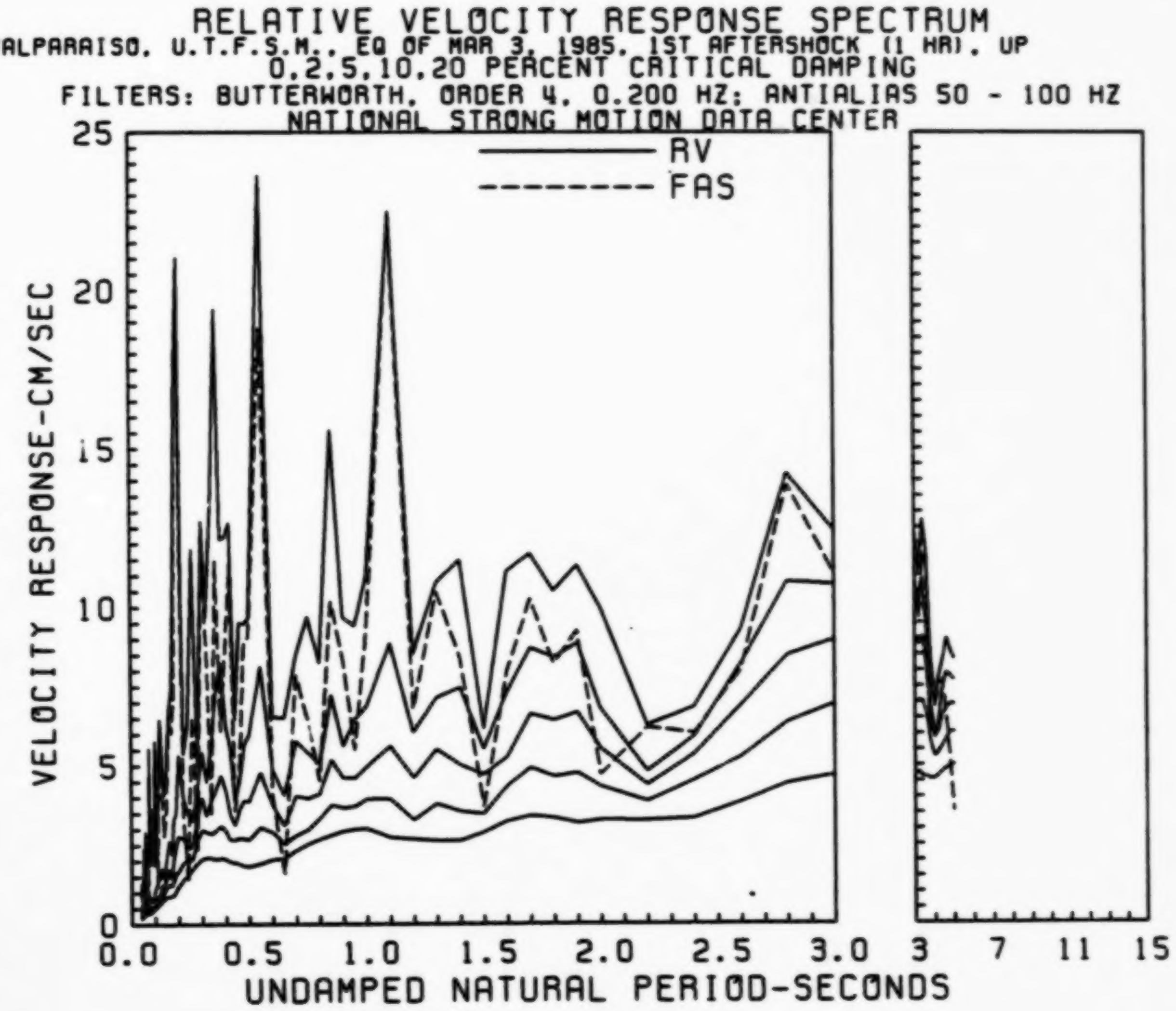


RELATIVE VELOCITY RESPONSE SPECTRUM
VINA DEL MAR, EQ OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR), 200 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER





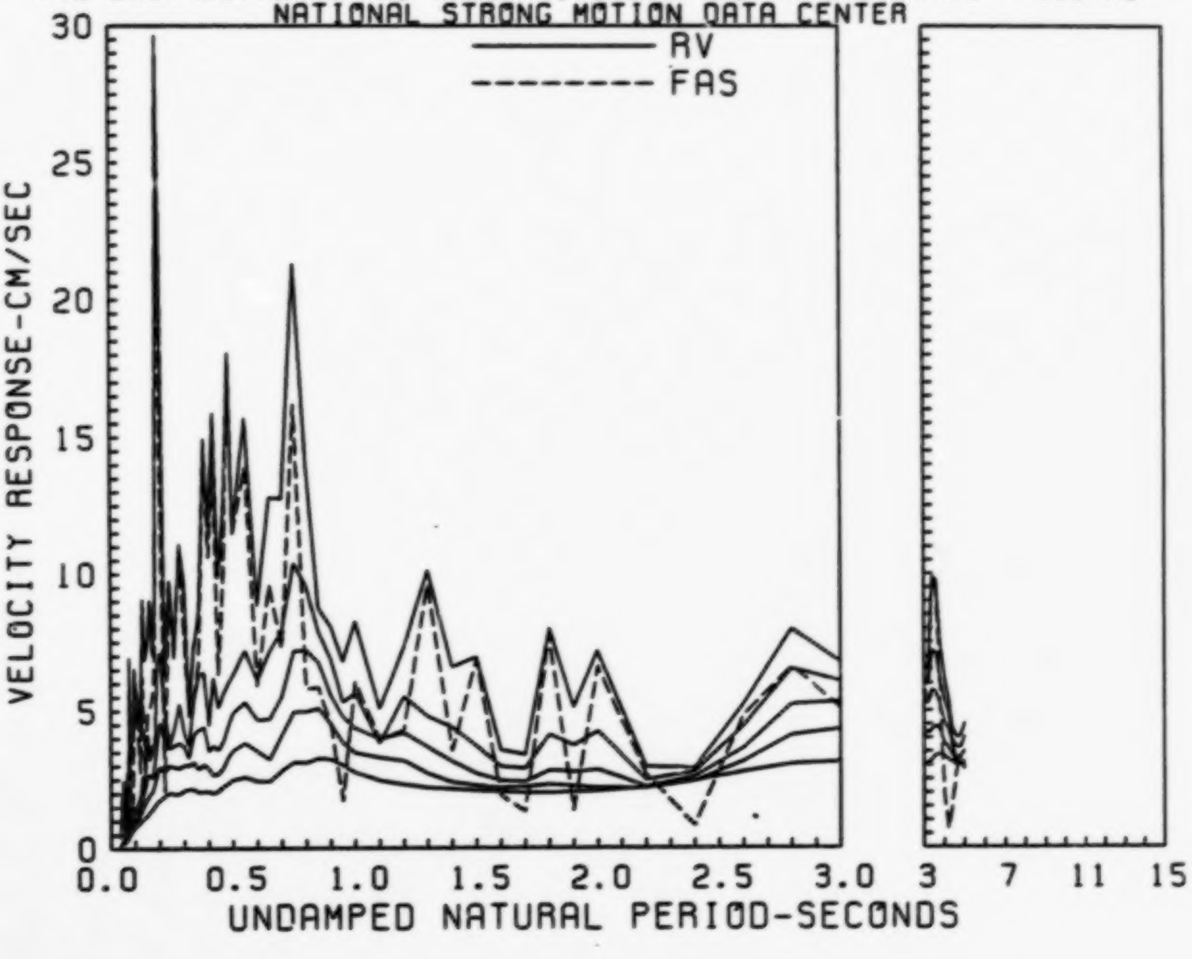
RELATIVE VELOCITY RESPONSE SPECTRUM
VALPARAISO, U.T.F.S.M., EQ OF MAR 3, 1985, 1ST AFTERSHOCK (1 HR), 160 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



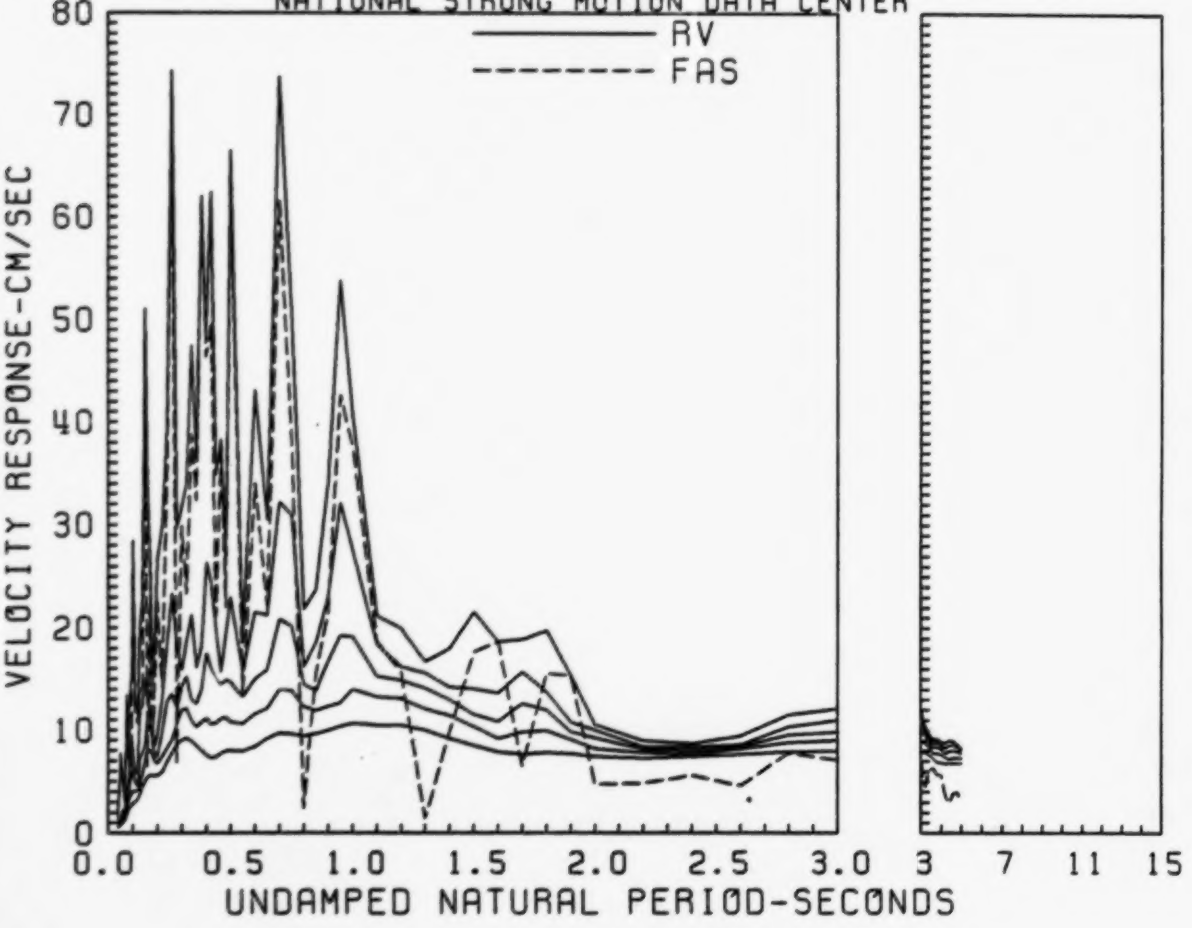
RELATIVE VELOCITY RESPONSE SPECTRUM
VALPARAISO, U.T.F.S.M., EQ OF MAR 3, 1985, 1ST AFTERSHOCK (1 HR), UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

RELATIVE VELOCITY RESPONSE SPECTRUM

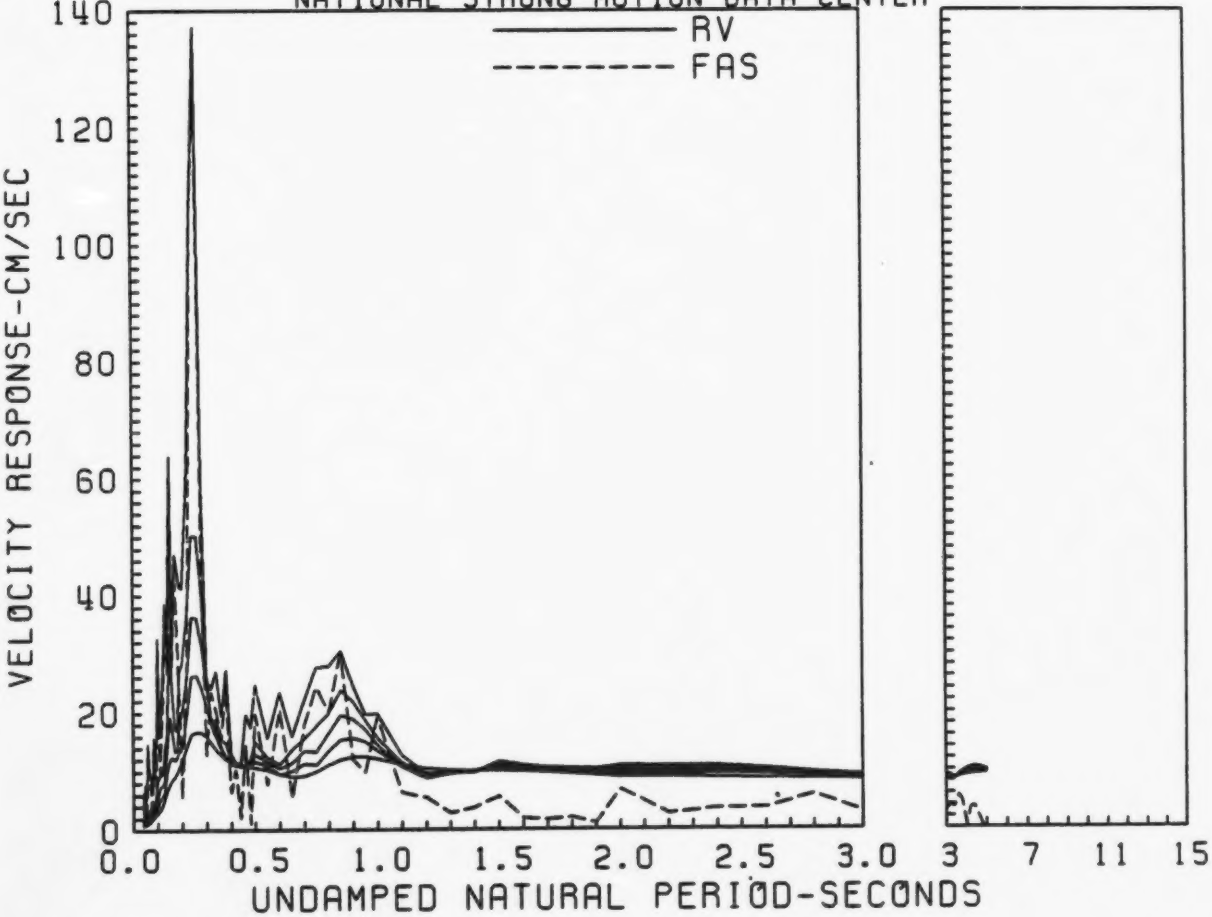
VALPARAISO, U.T.F.S.M., EQ OF MAR 3, 1985, 1ST AFTERSHOCK (1 HR), 070 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

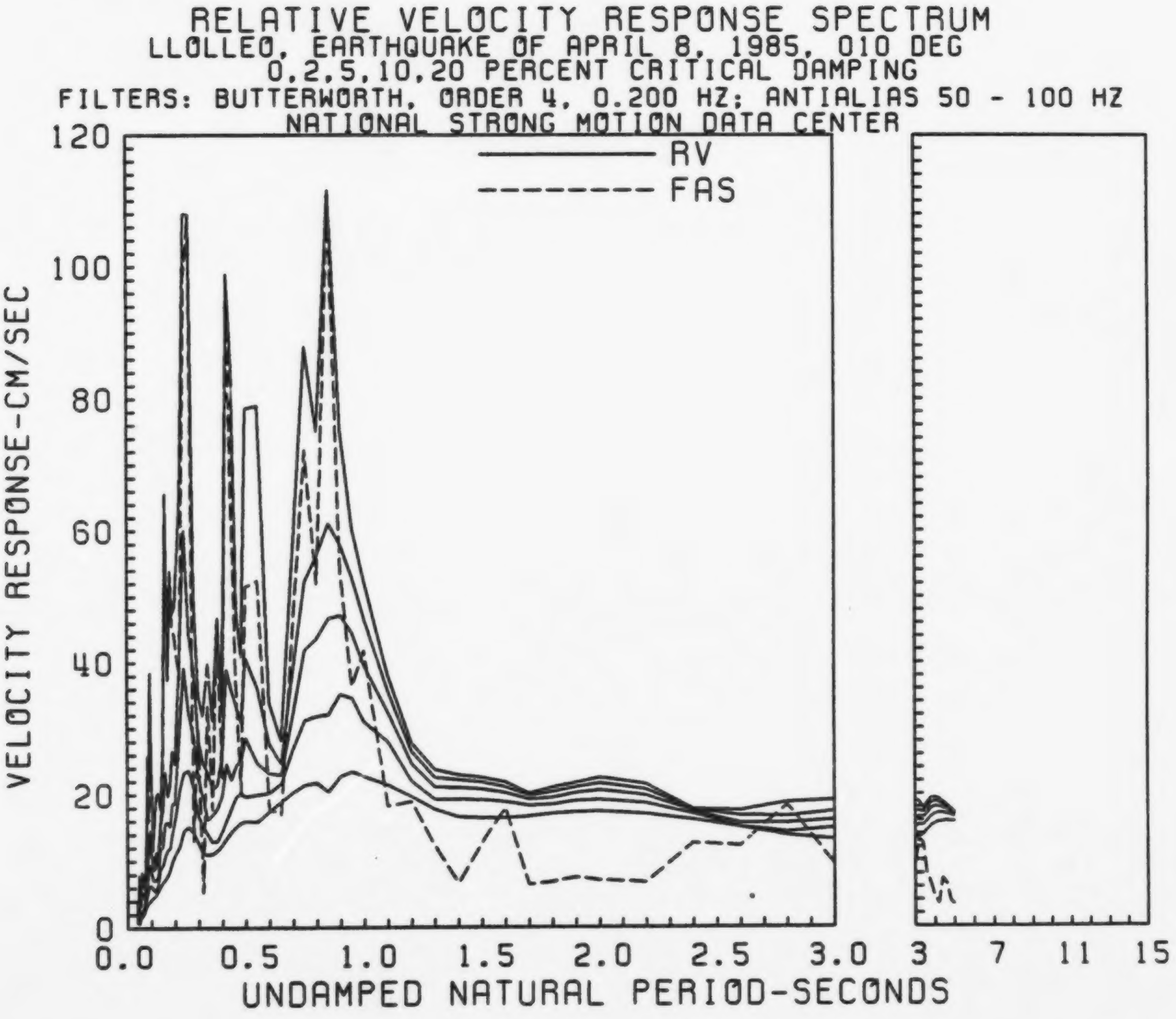


RELATIVE VELOCITY RESPONSE SPECTRUM
LLOLLEO, EARTHQUAKE OF APRIL 8, 1985, 100 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



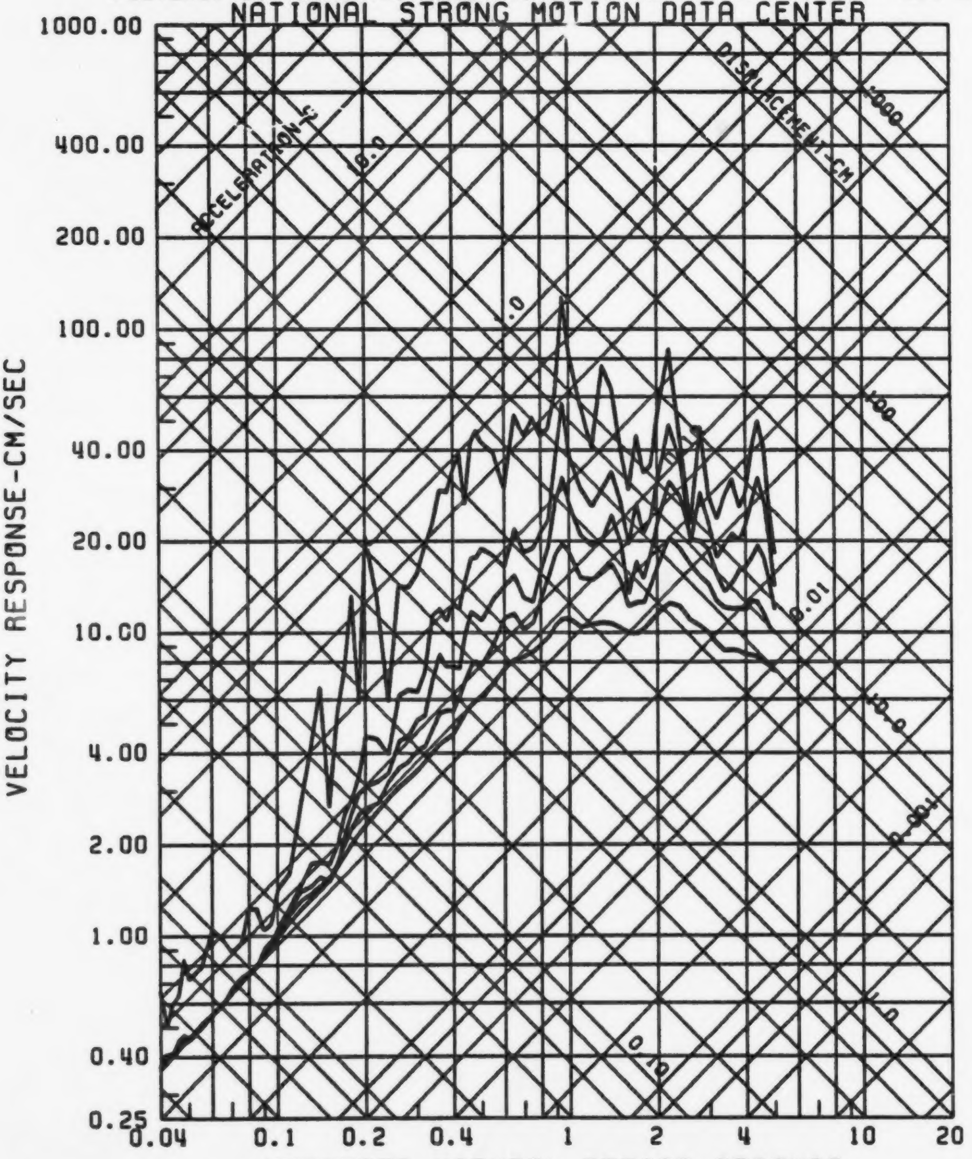
RELATIVE VELOCITY RESPONSE SPECTRUM
LLOLLEO, EARTHQUAKE OF APRIL 8, 1985, UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

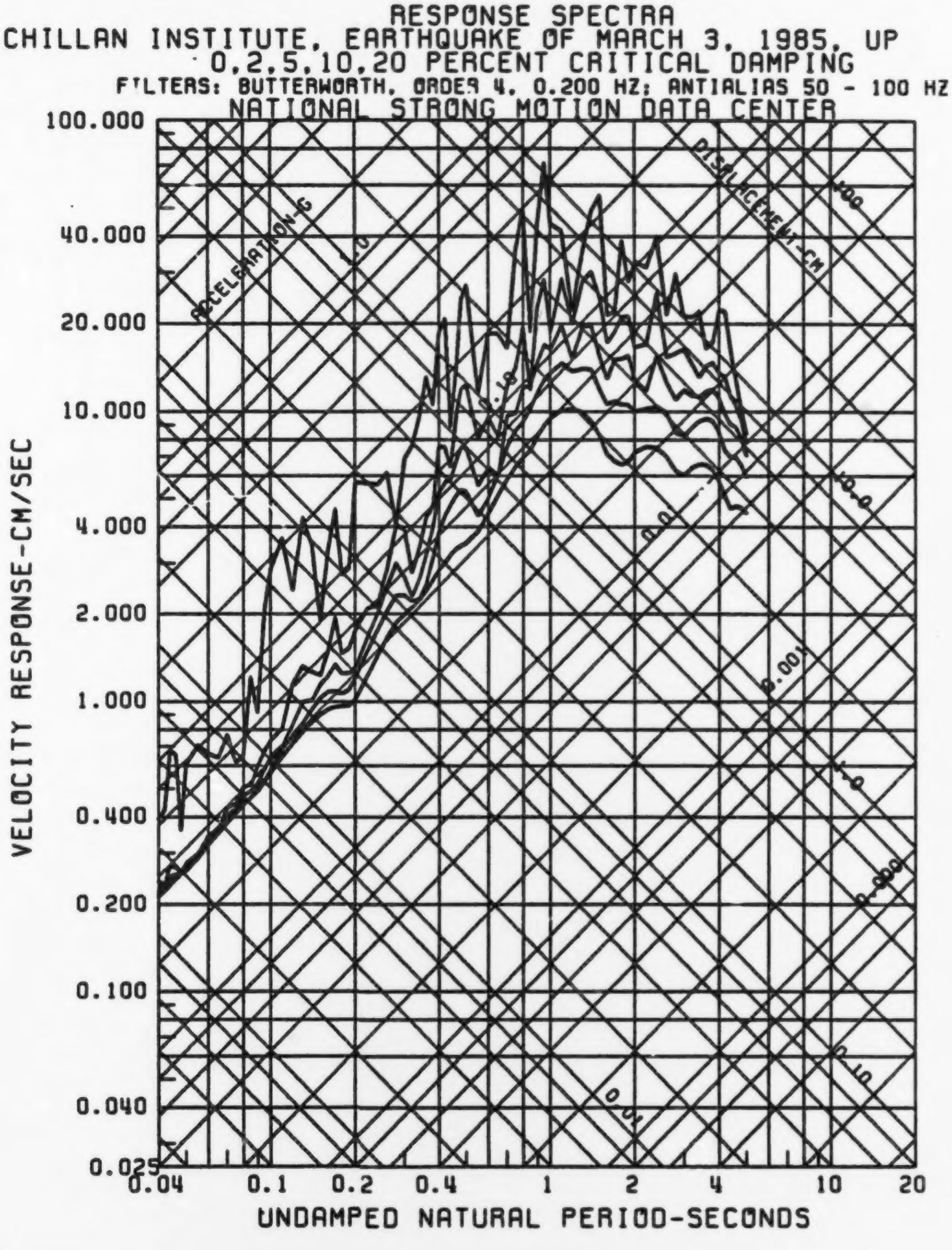




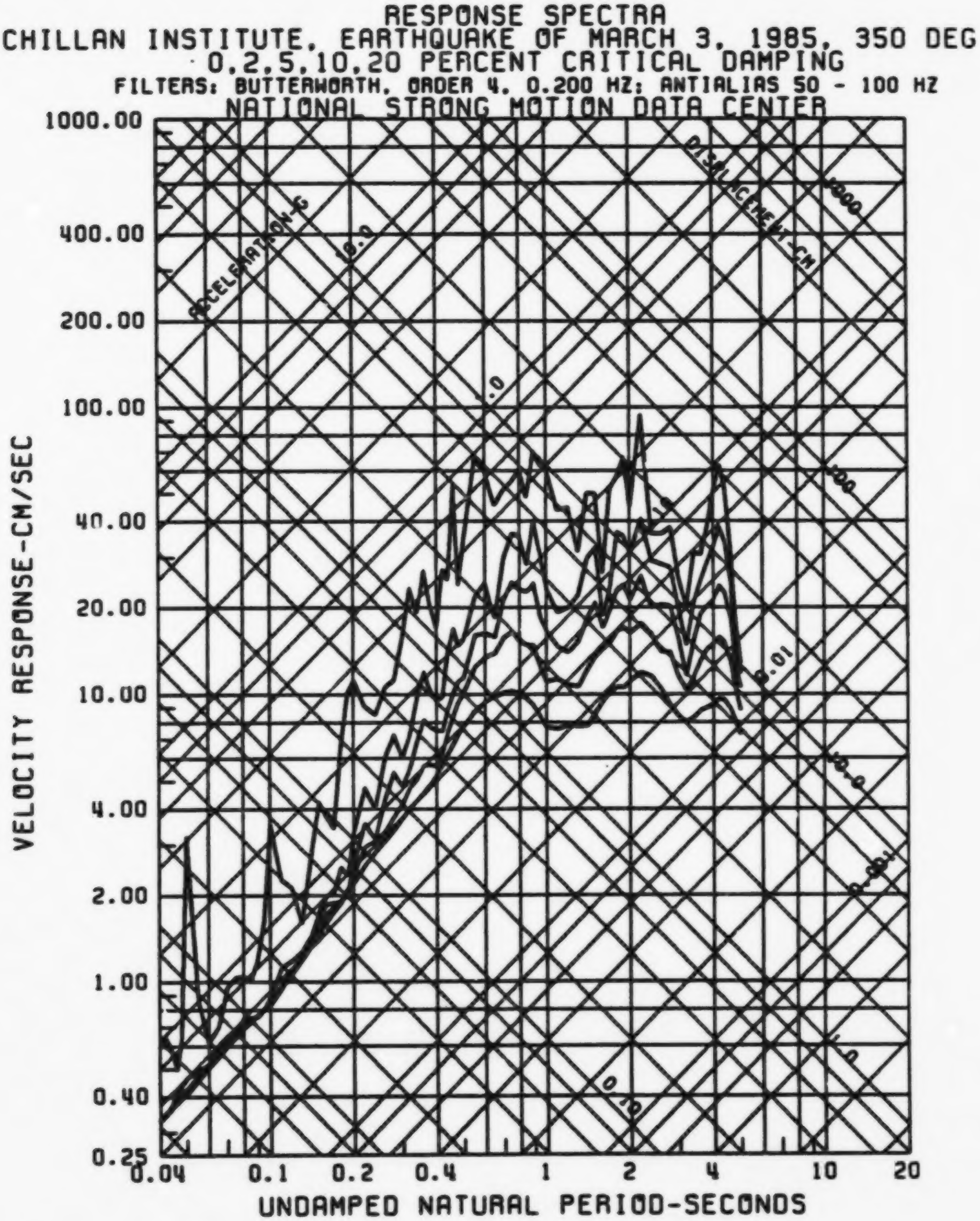
RELATIVE VELOCITY RESPONSE SPECTRUM
LLOLLEO, EARTHQUAKE OF APRIL 8, 1985, 010 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

RESPONSE SPECTRA
CHILLAN INSTITUTE, EARTHQUAKE OF MARCH 3, 1985, 80 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



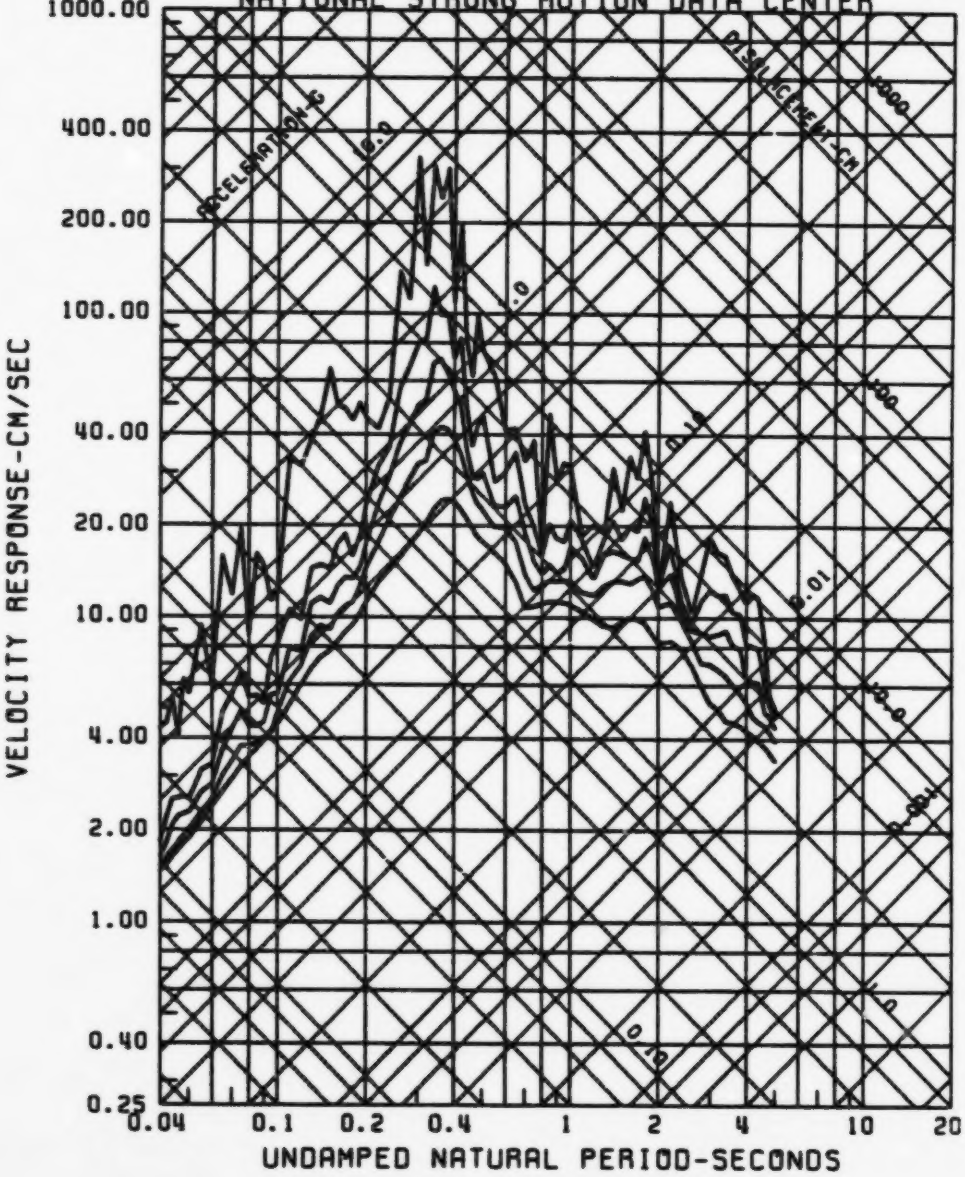


RESPONSE SPECTRA
CHILLAN INSTITUTE, EARTHQUAKE OF MARCH 3, 1985, UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

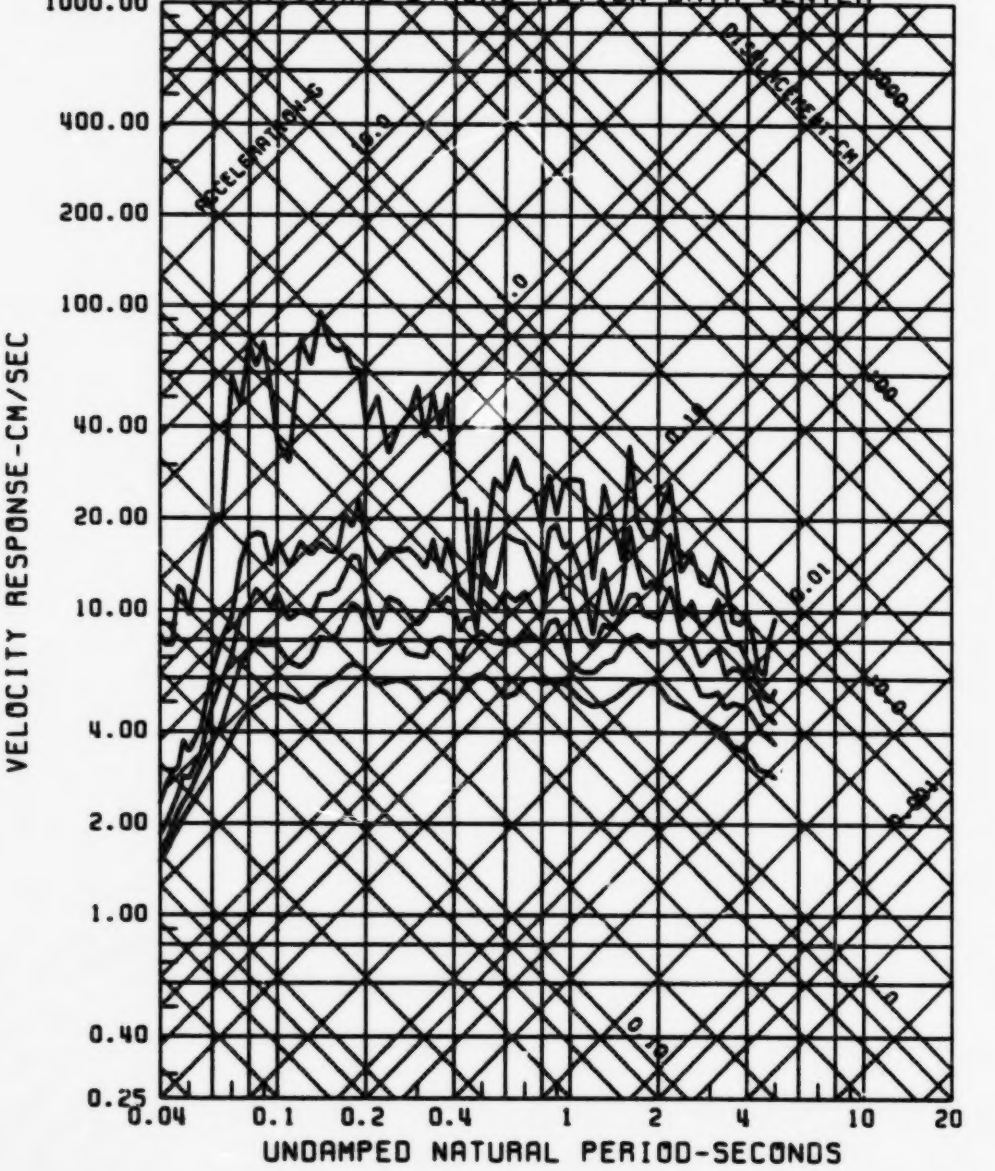


RESPONSE SPECTRA
CHILLAN INSTITUTE, EARTHQUAKE OF MARCH 3, 1985, 350 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

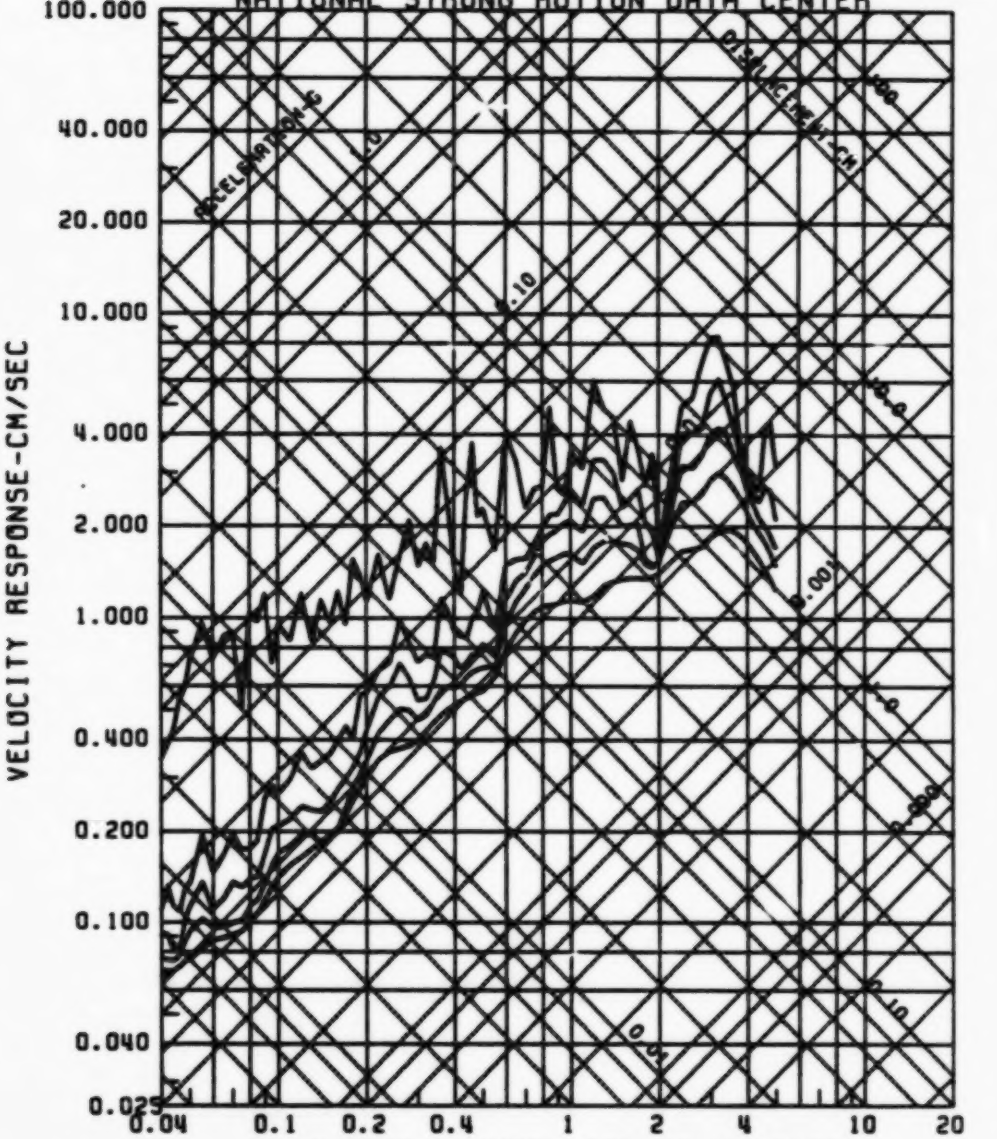
RESPONSE SPECTRA
PAPUDO, EARTHQUAKE OF MARCH 3, 1985, 050 DEGREES
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



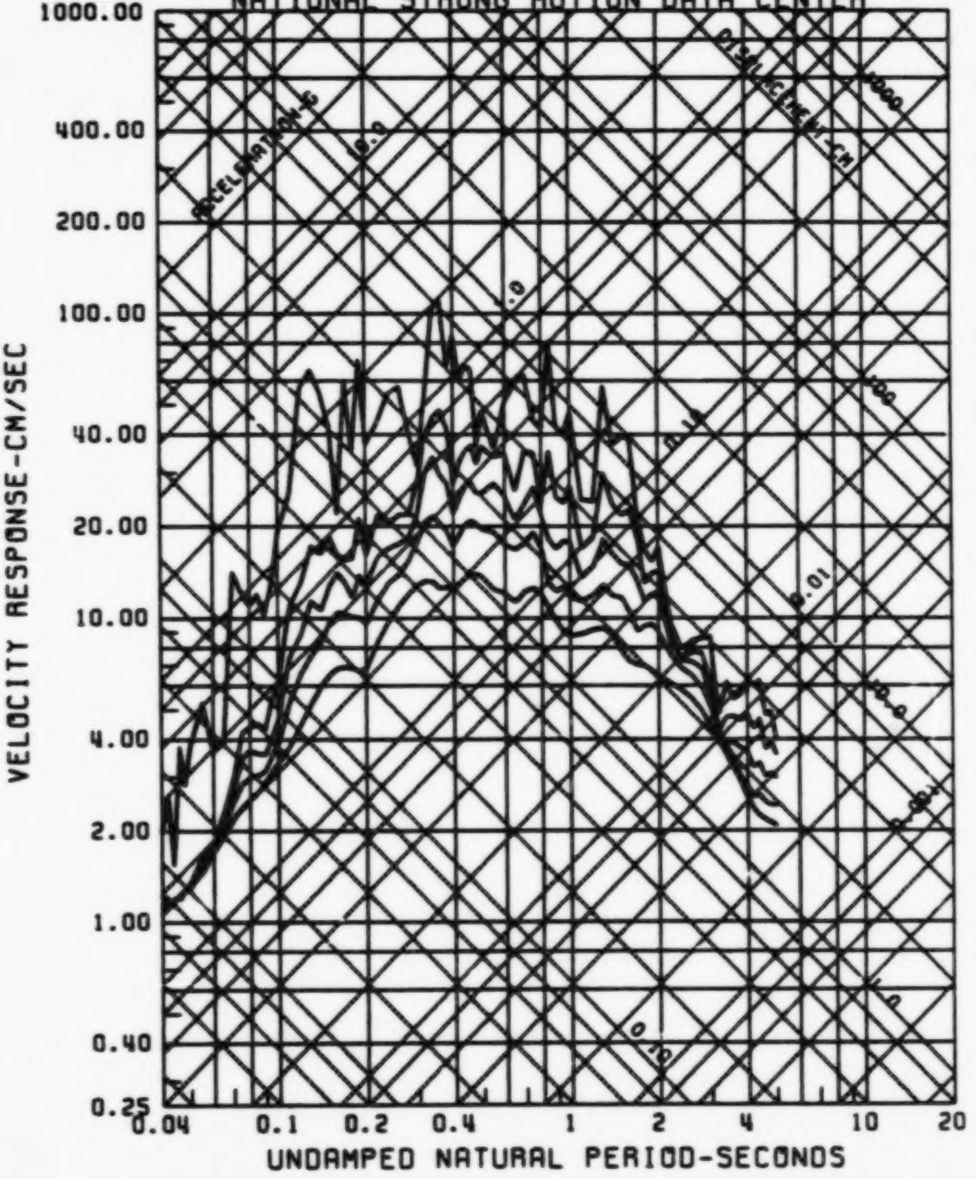
RESPONSE SPECTRA
PAPUDO, EARTHQUAKE OF MARCH 3, 1985, UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



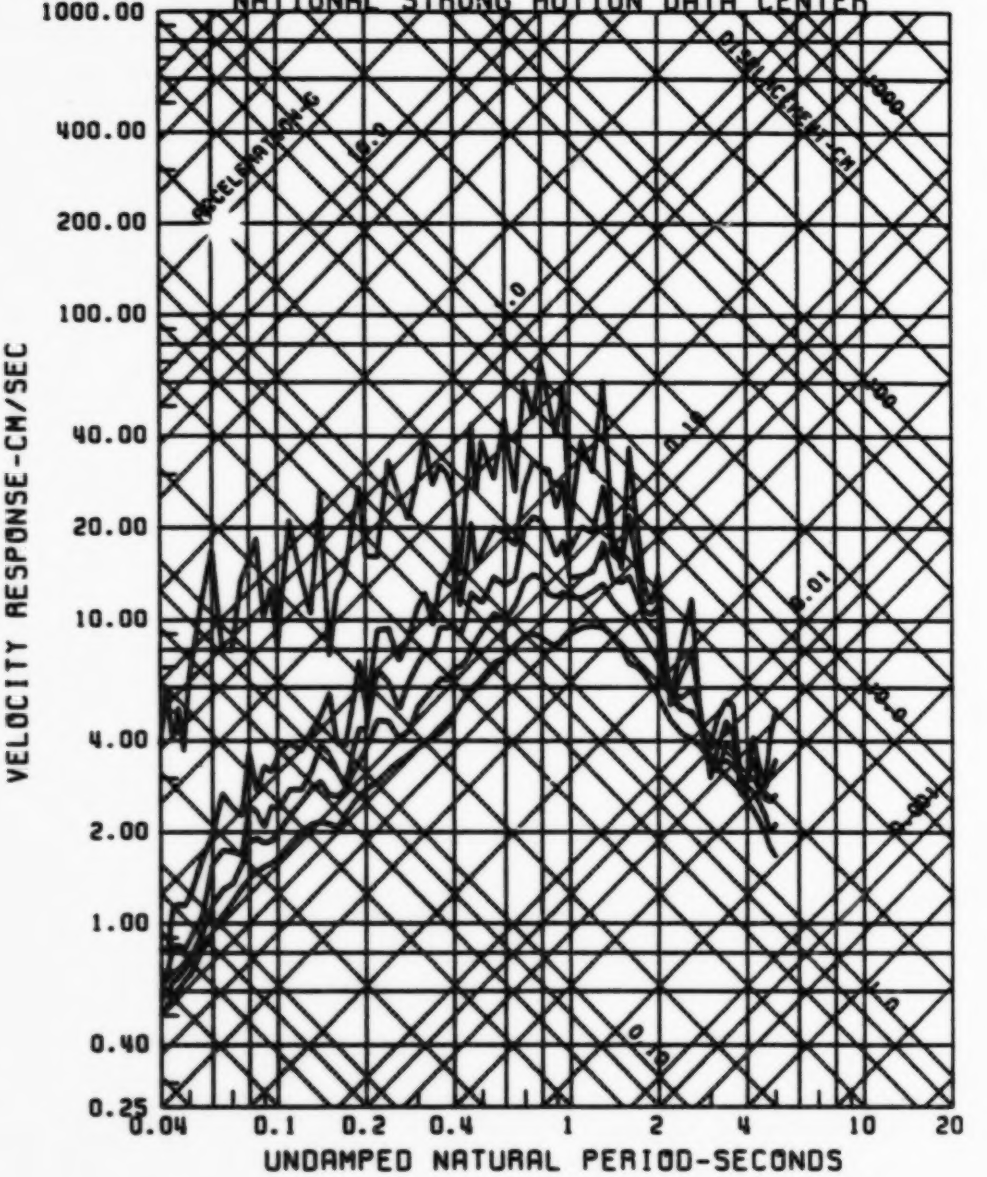
RESPONSE SPECTRA
PAPUDO, EARTHQUAKE OF MARCH 3, 1985, 140 DEGREES
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



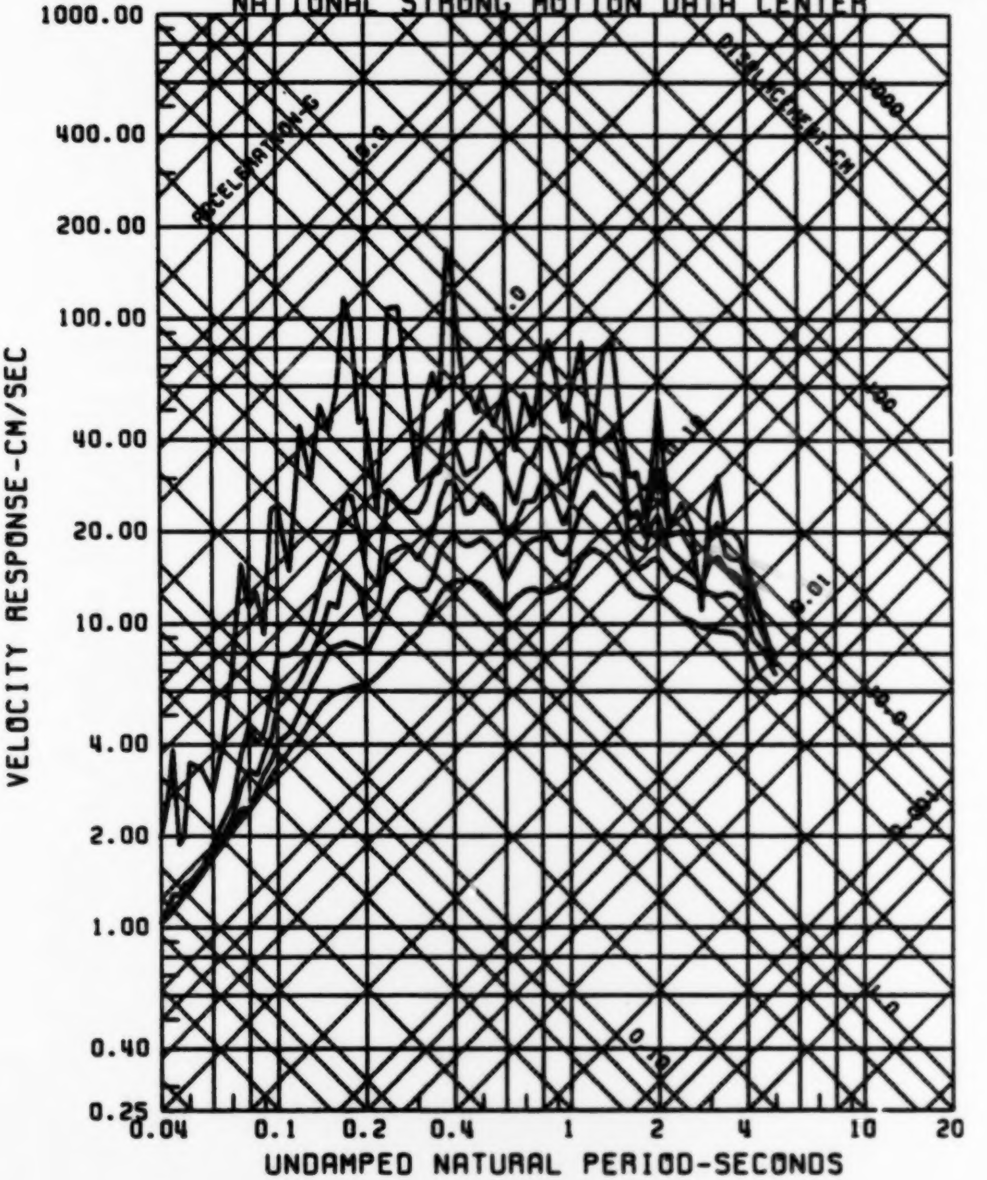
RESPONSE SPECTRA
TALCA. EARTHQUAKE OF MARCH 3. 1985. 280 DEG
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH. ORDER 4. 0.200 HZ: ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

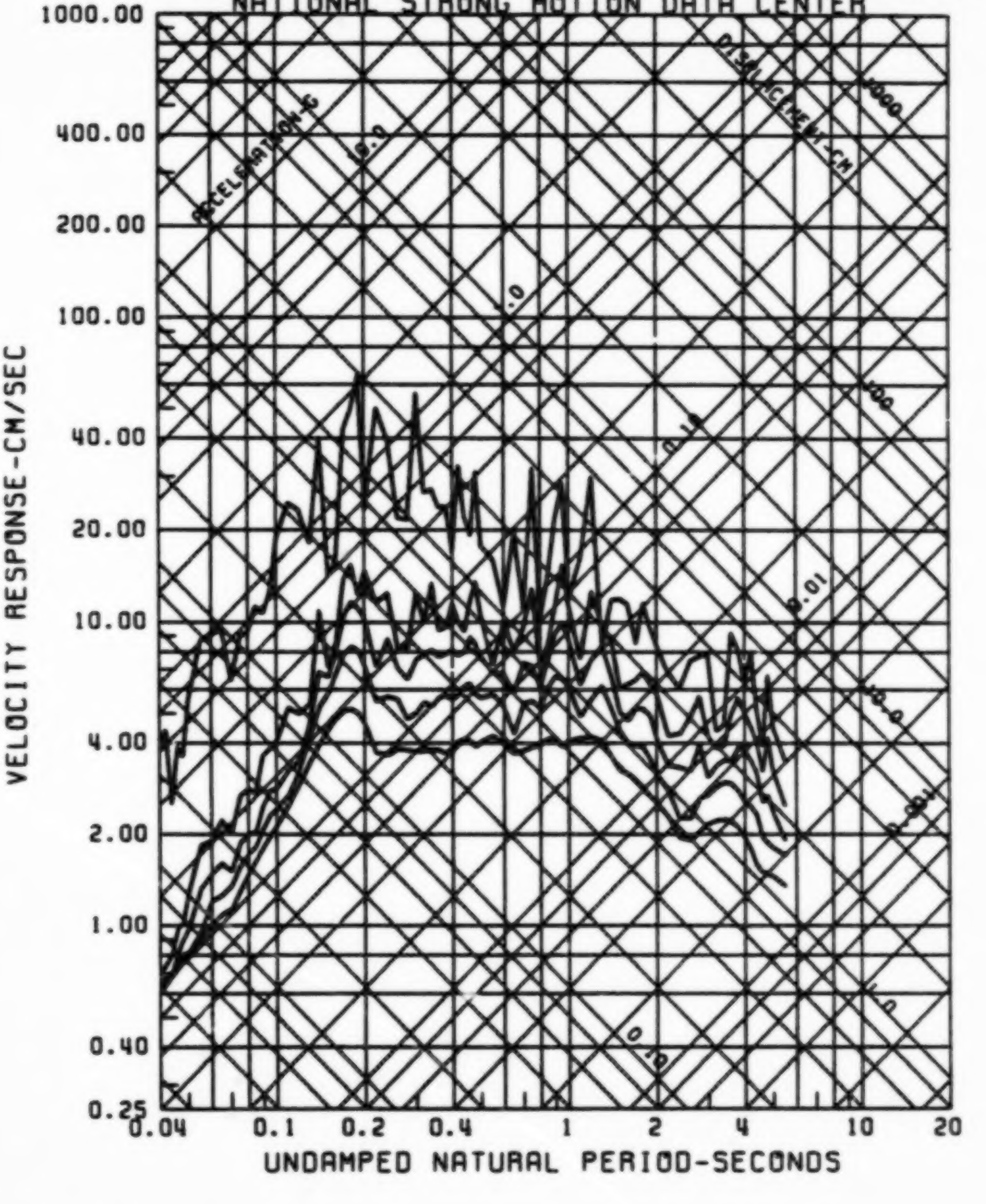


RESPONSE SPECTRA
TALCA, EARTHQUAKE OF MARCH 3, 1985, UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

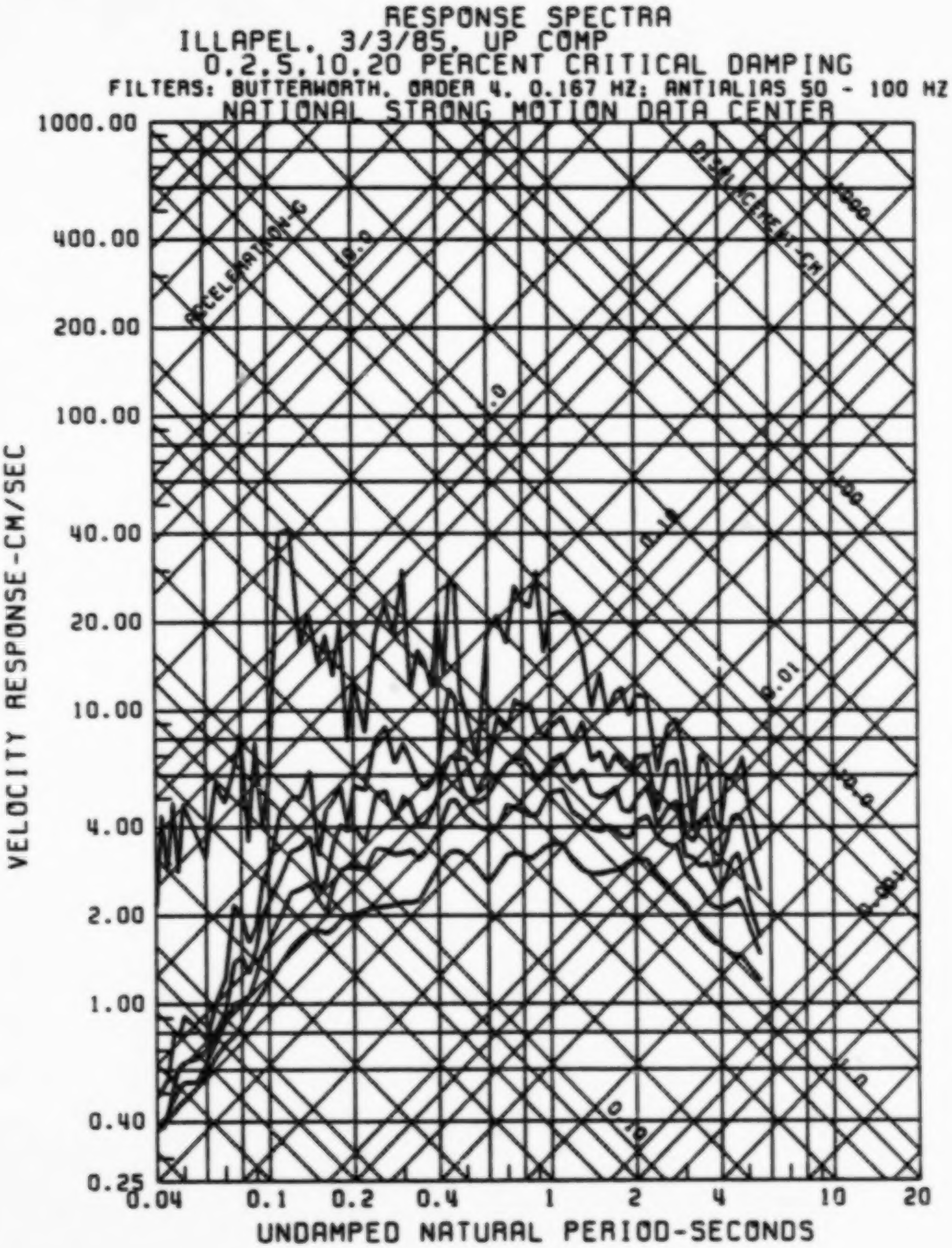


RESPONSE SPECTRA
TALCA, EARTHQUAKE OF MARCH 3, 1985, 010 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

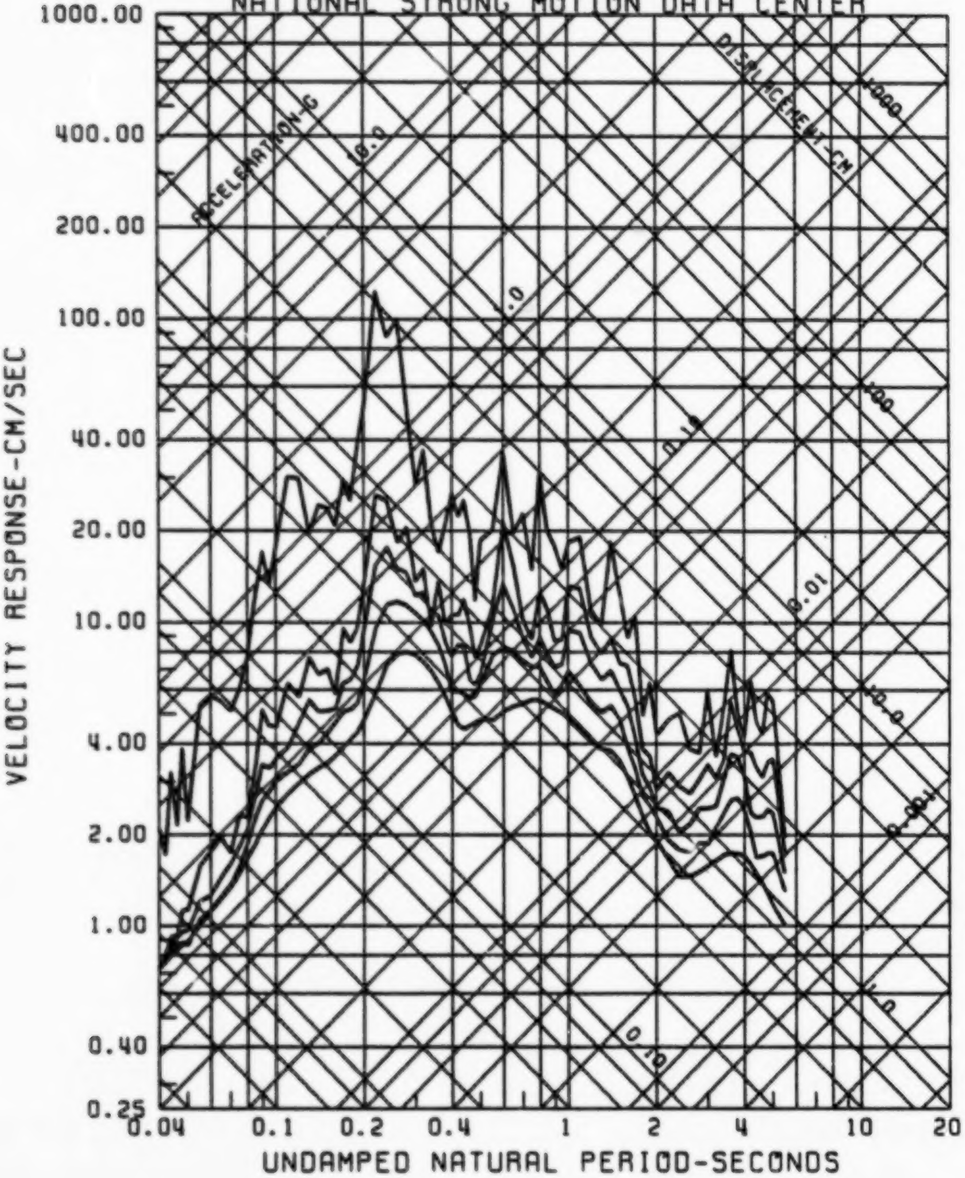


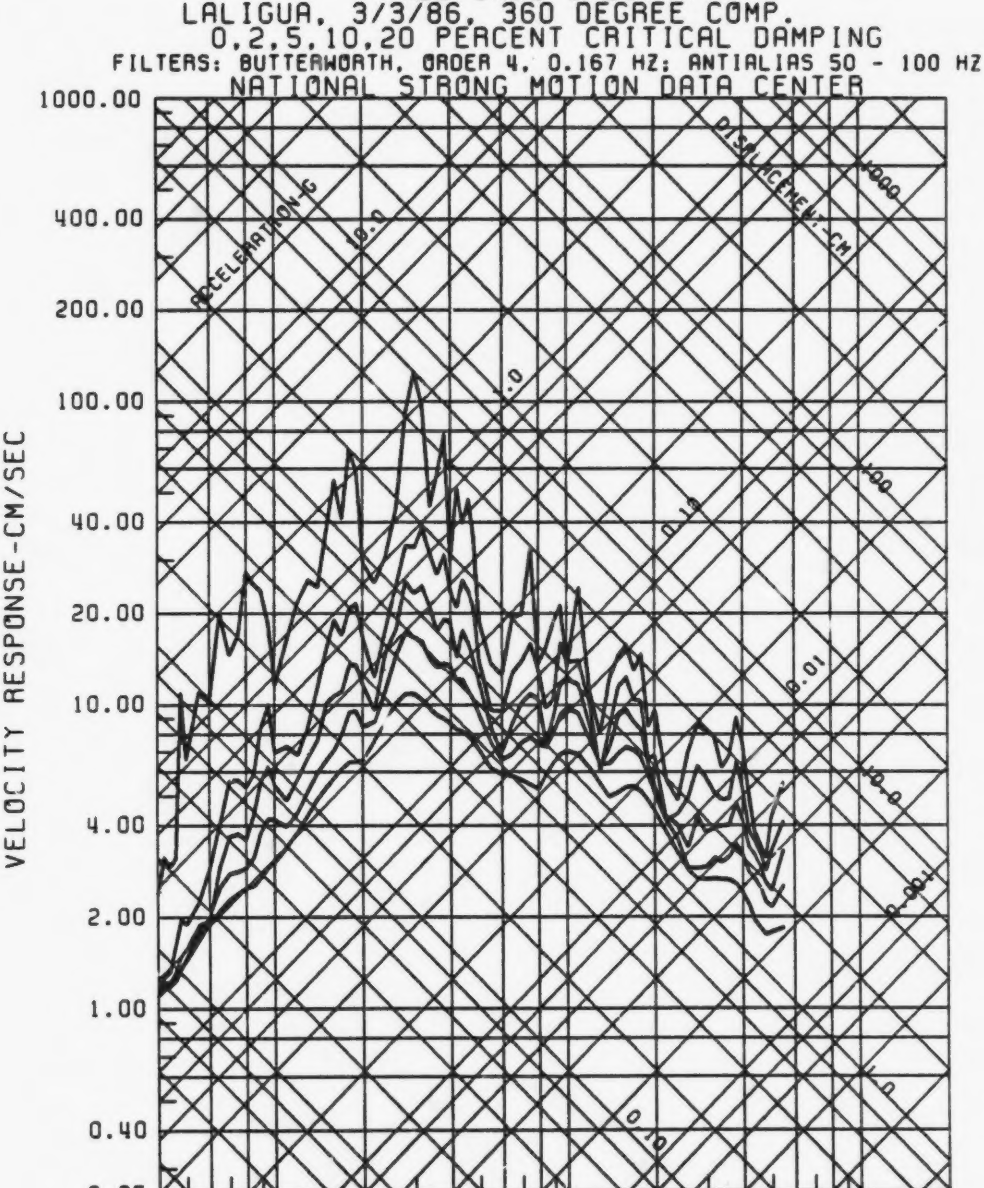


RESPONSE SPECTRA
ILLAPEL, 3/3/85, 360 DEGREE COMP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER


RESPONSE SPECTRA
ILLAPEL, 3/3/85, UP COMP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
1000.00
400.00
200.00
100.00
40.00
20.00
10.00
4.00
2.00
1.00
0.40
0.25
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
10.0
1.0
0.10
0.01
0.001
DISPLACEMENT-CM
1000
100
10.0
1.0
0.10

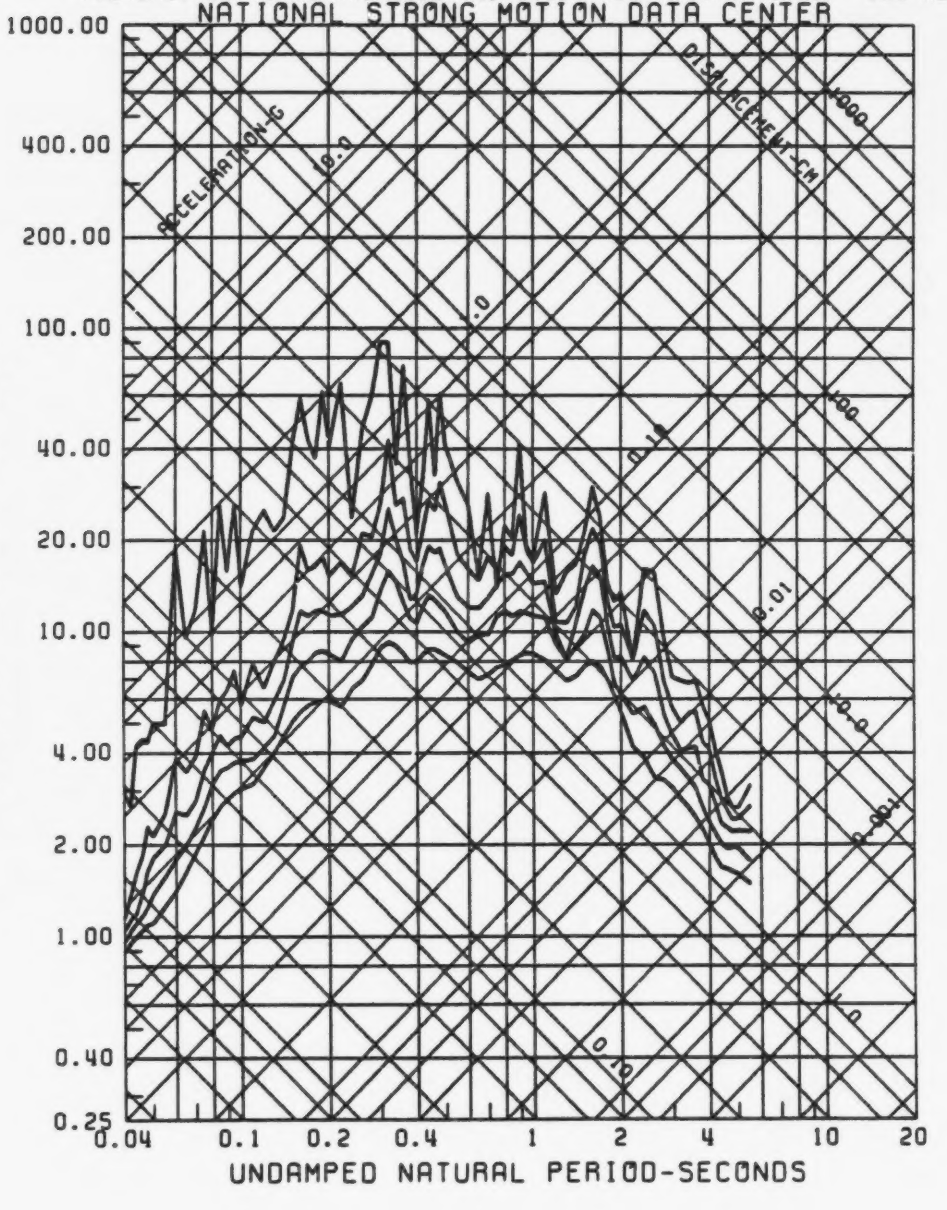
RESPONSE SPECTRA
ILLAPEL, 3/3/85, 090 DEGREE COMP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



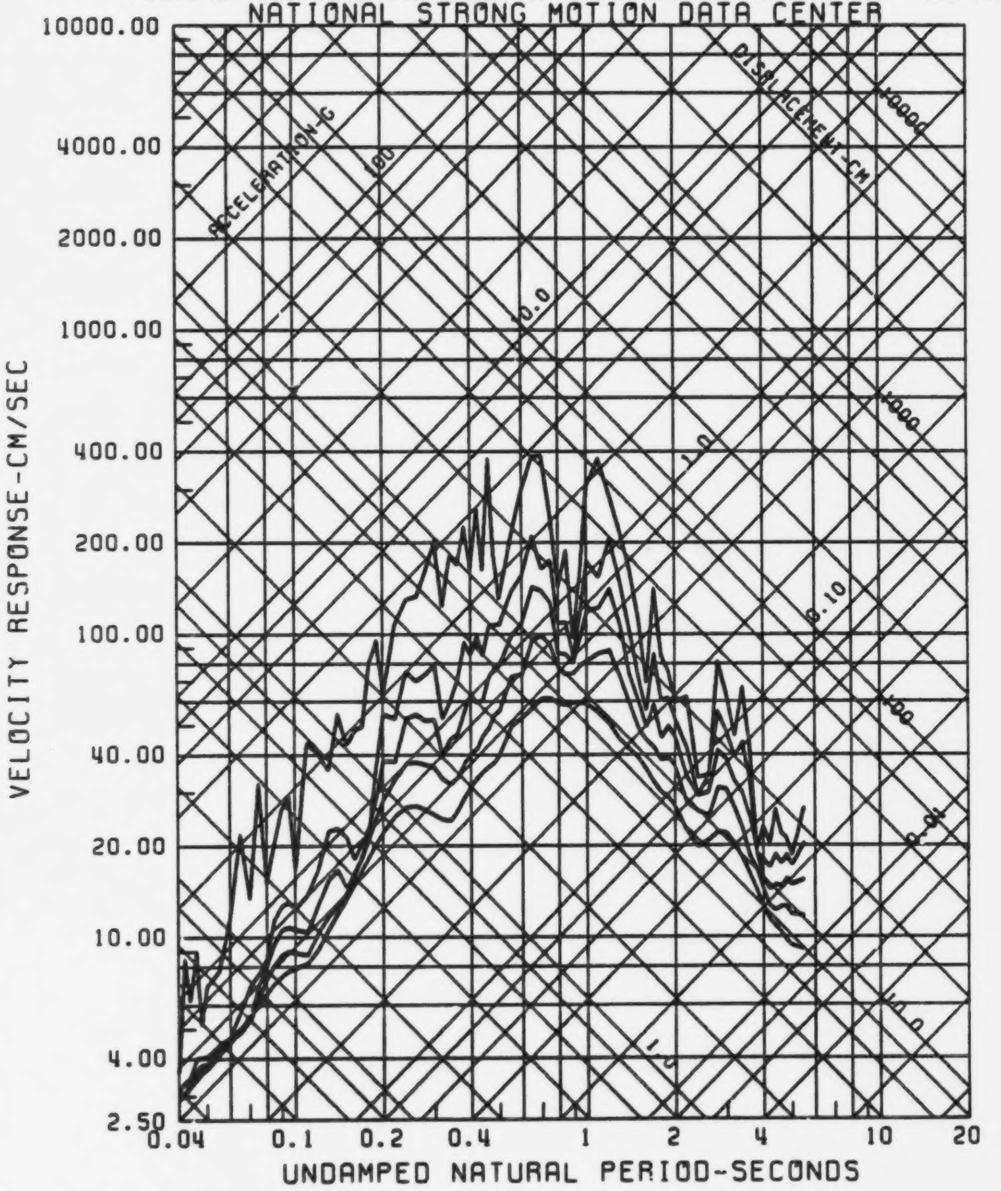


RESPONSE SPECTRA
LALIGUA, 3/3/86, 360 DEGREE COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

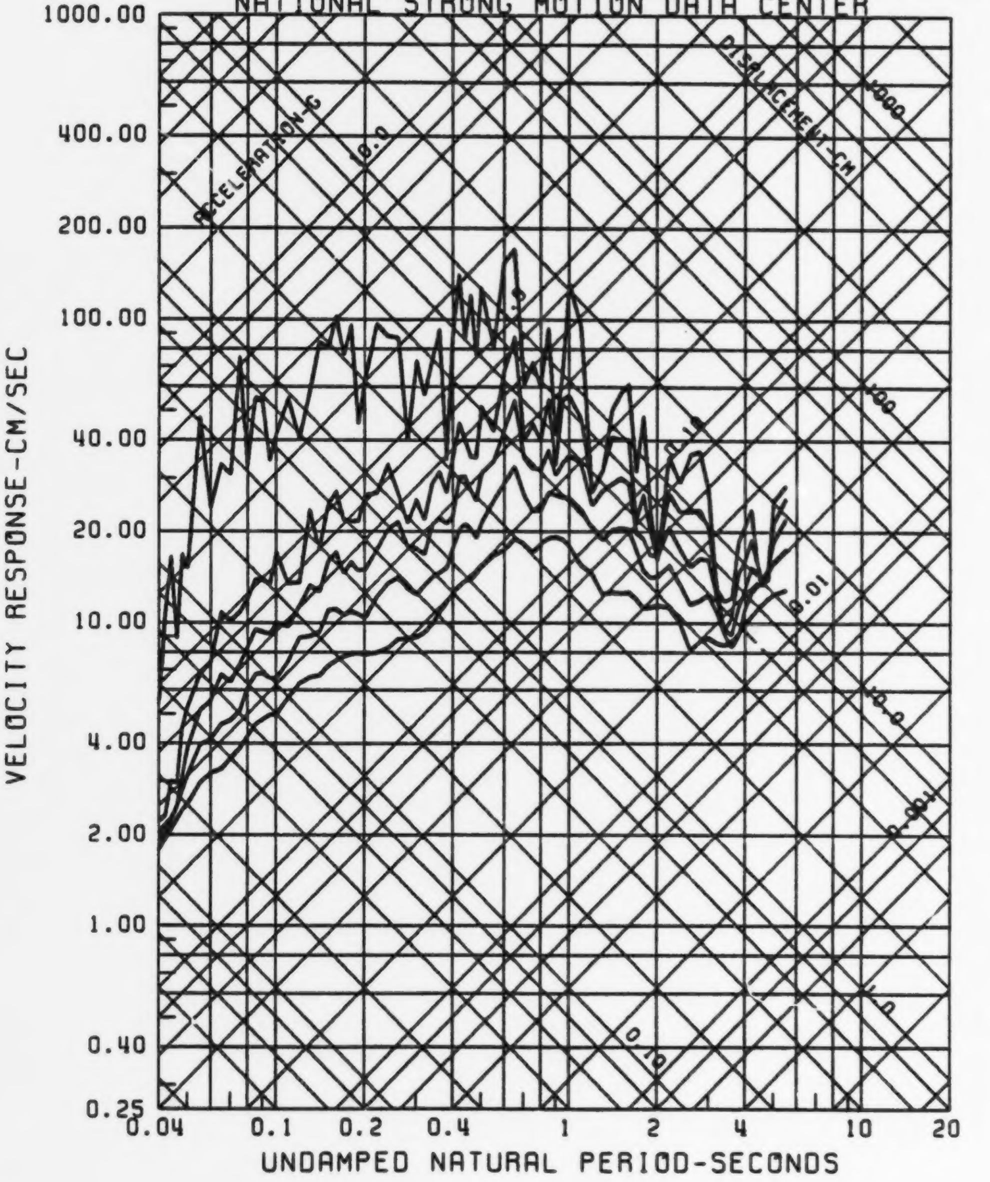
RESPONSE SPECTRA
LALIGUA, 3/3/86, UP COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

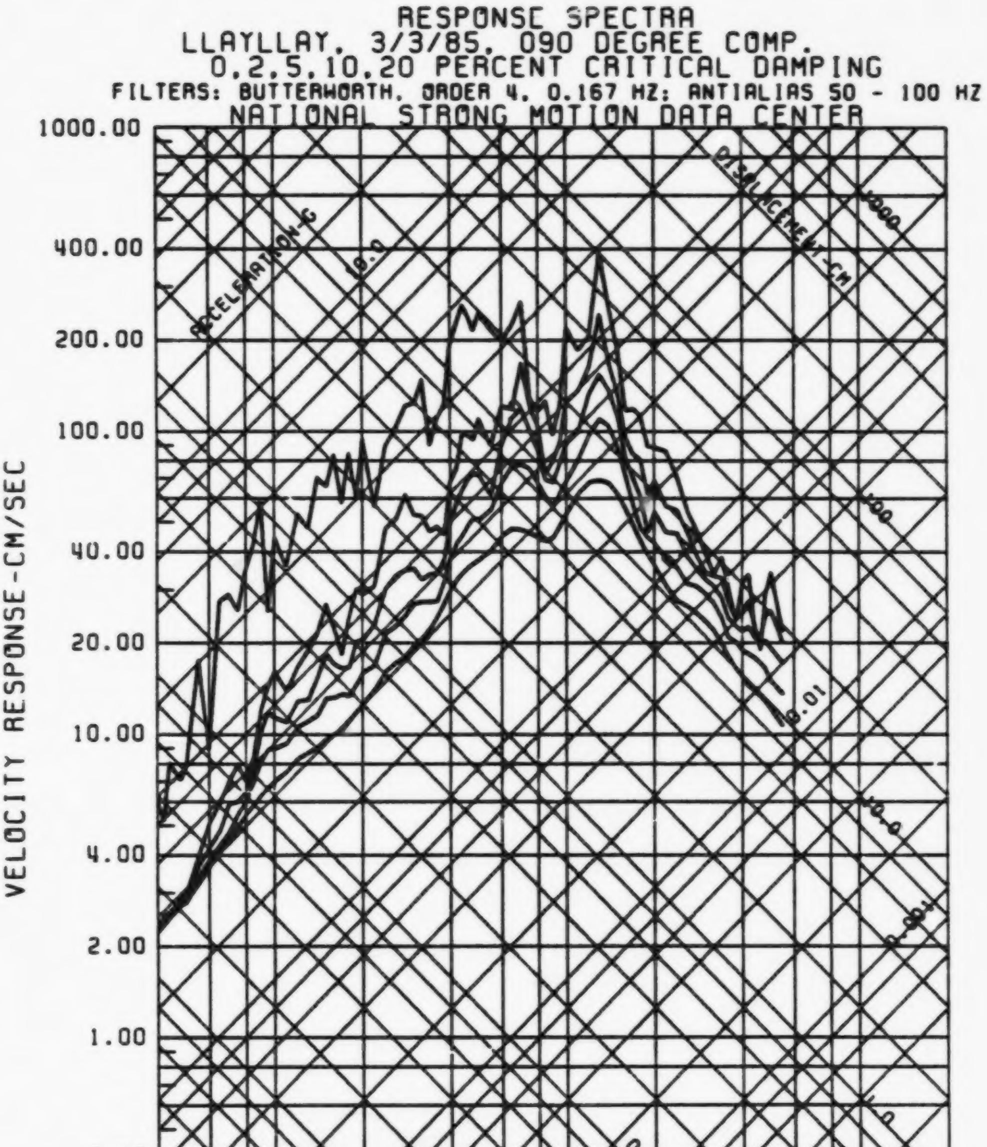


RESPONSE SPECTRA
LLAYLLAY, 3/3/85, 360 DEGREE COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



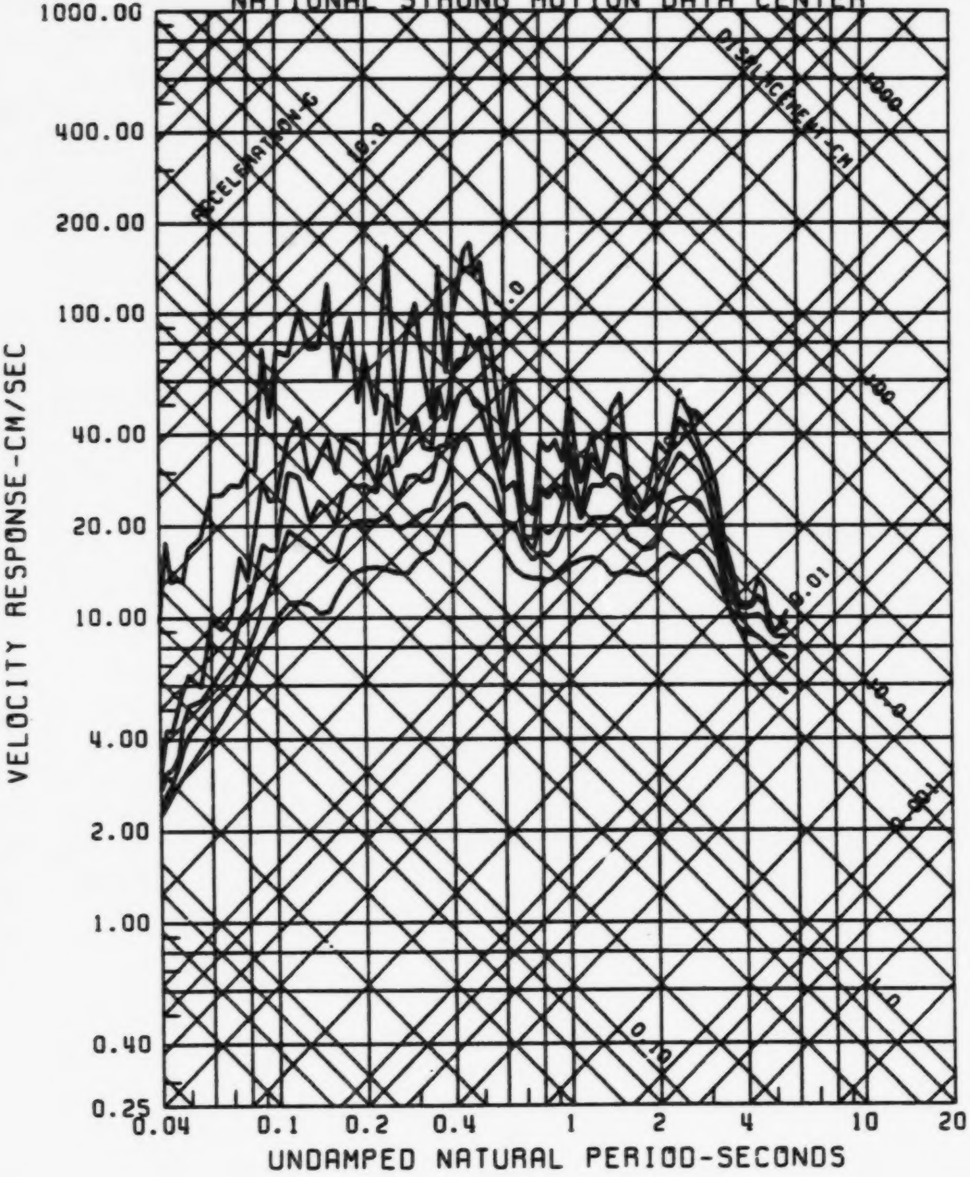
RESPONSE SPECTRA
LLAYLLAY, 3/3/85, UP COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



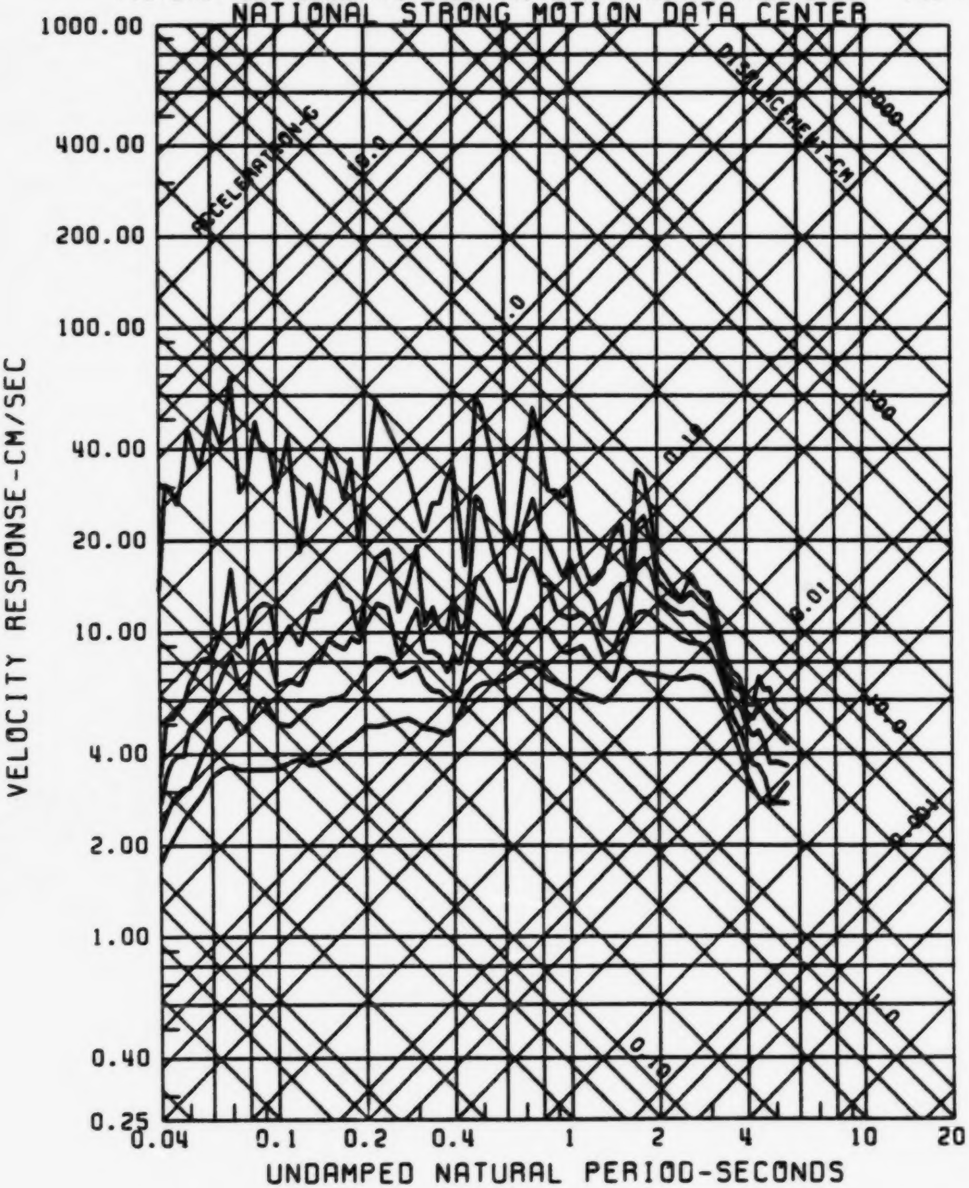


RESPONSE SPECTRA
LLAYLLAY, 3/3/85, 090 DEGREE COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

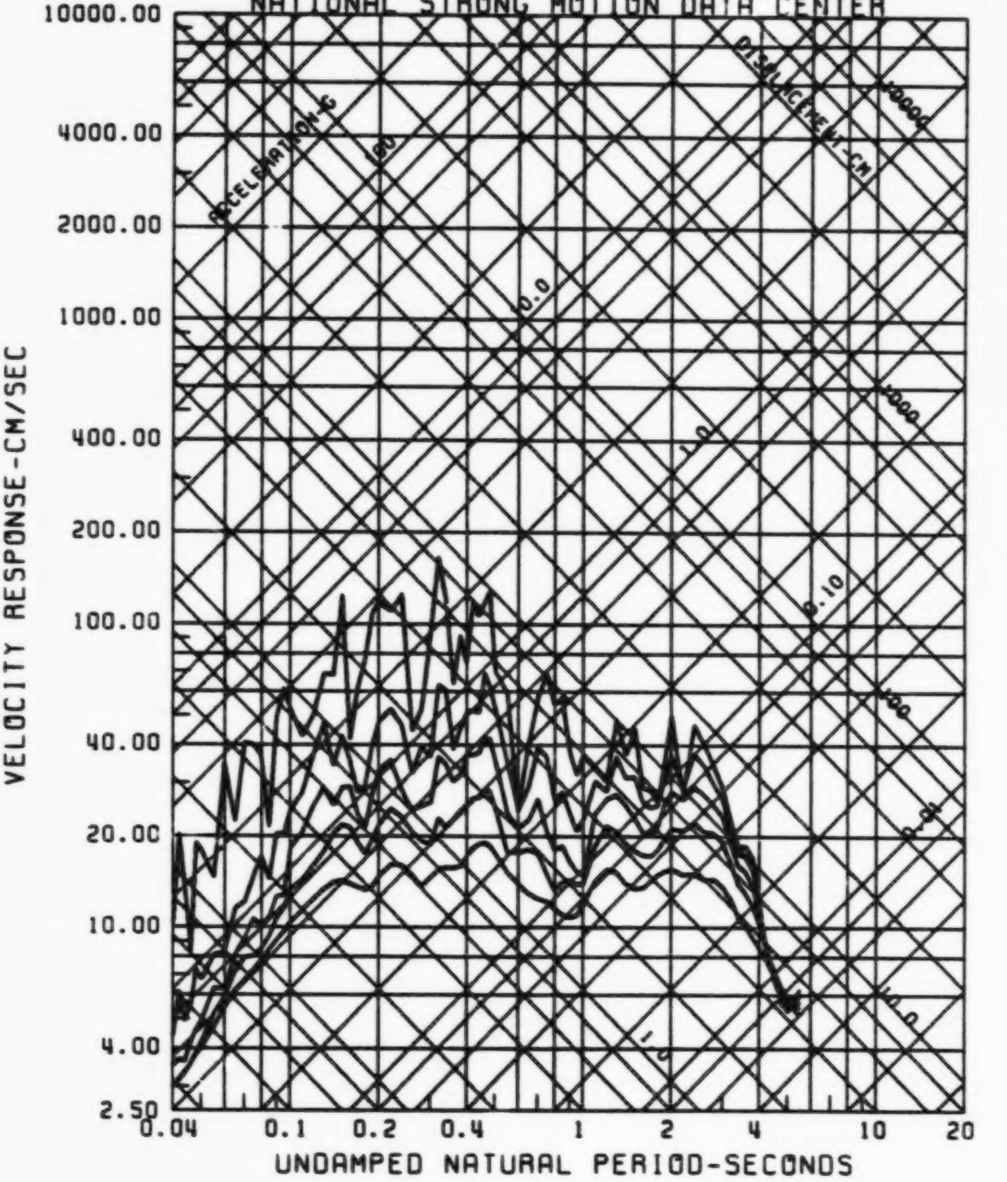
RESPONSE SPECTRA
SAN FELIPE, 3/3/85, 360 DEGREE COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



RESPONSE SPECTRA
SAN FELIPE, 3/3/85, UP COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



RESPONSE SPECTRA
SAN FELIPE, 3/3/85, 090 DEGREE COMP.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



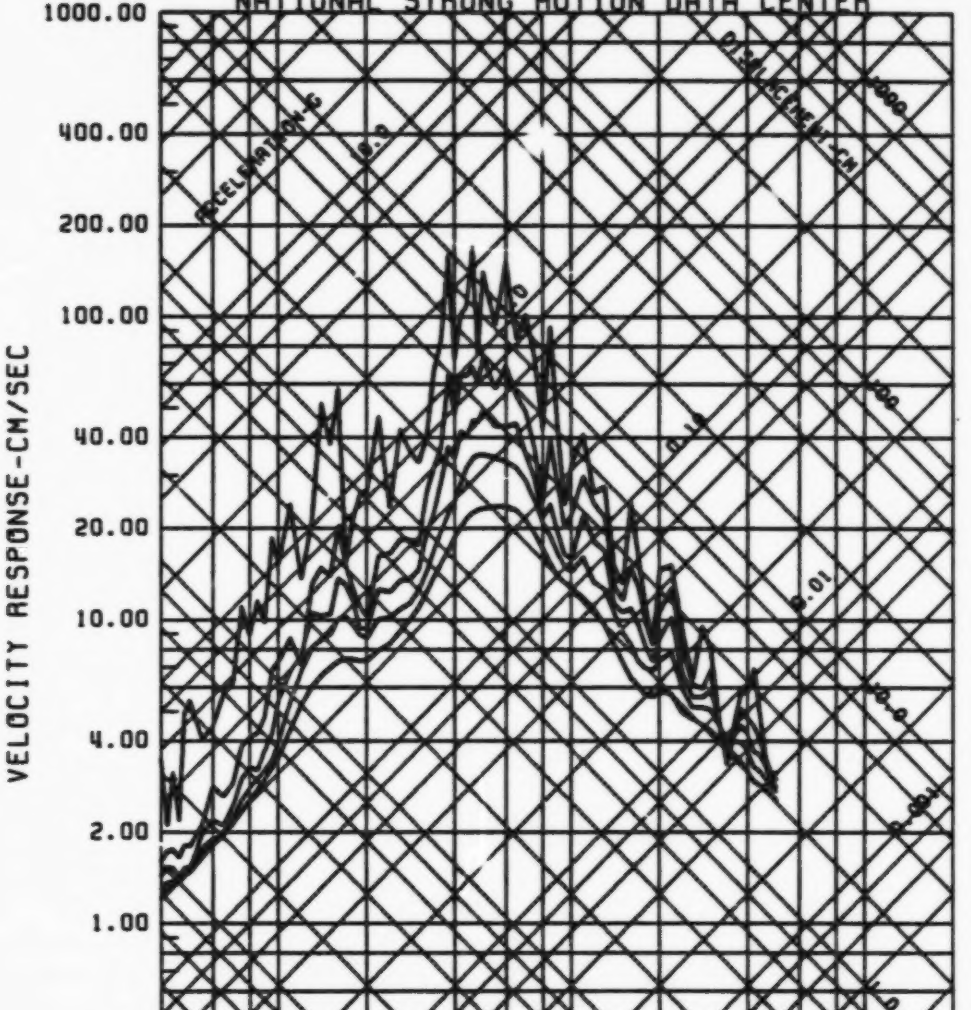
RESPONSE SPECTRA

LLOLLEO, EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR), 100

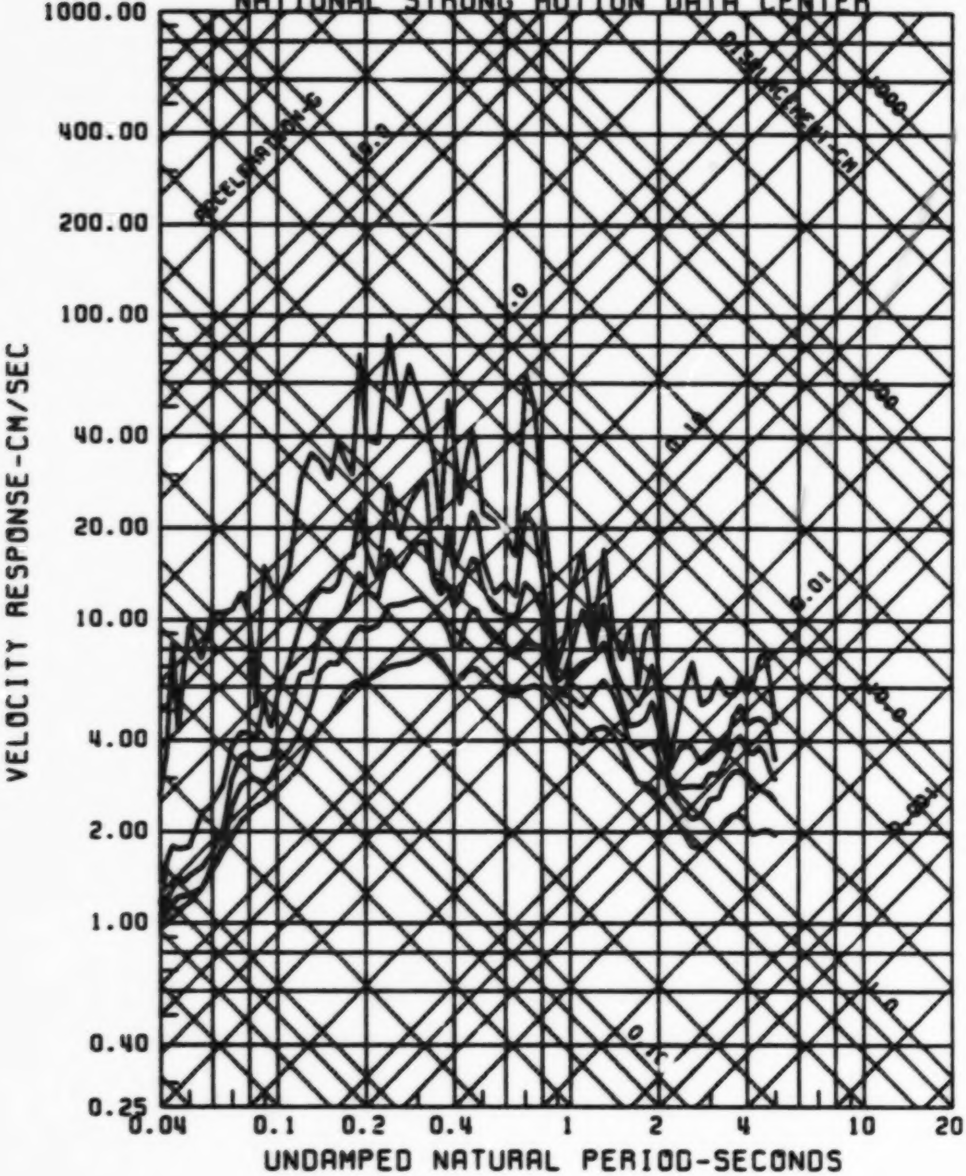
0,2,5,10,20 PERCENT CRITICAL DAMPING

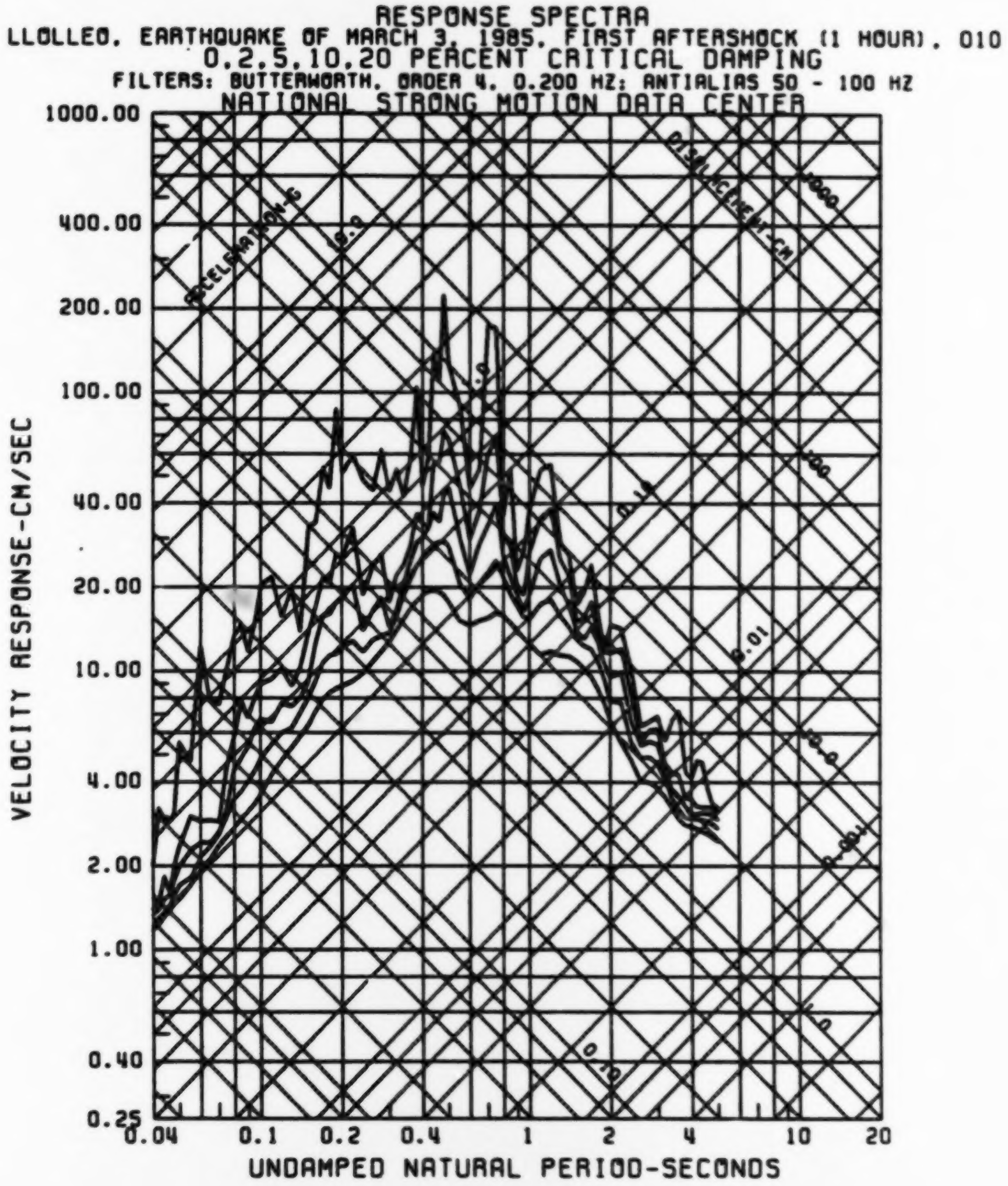
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ

NATIONAL STRONG MOTION DATA CENTER



RESPONSE SPECTRA
LLOLLEO, EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR), UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER




RESPONSE SPECTRA
LLOLLEO, EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR), 010
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
1000.00
400.00
200.00
100.00
40.00
20.00
10.00
4.00
2.00
1.00
0.40
0.25
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
10.0
1.0
0.10
0.01
0.001
DISPLACEMENT-CM
1000
100
10.0
1.0
0.10

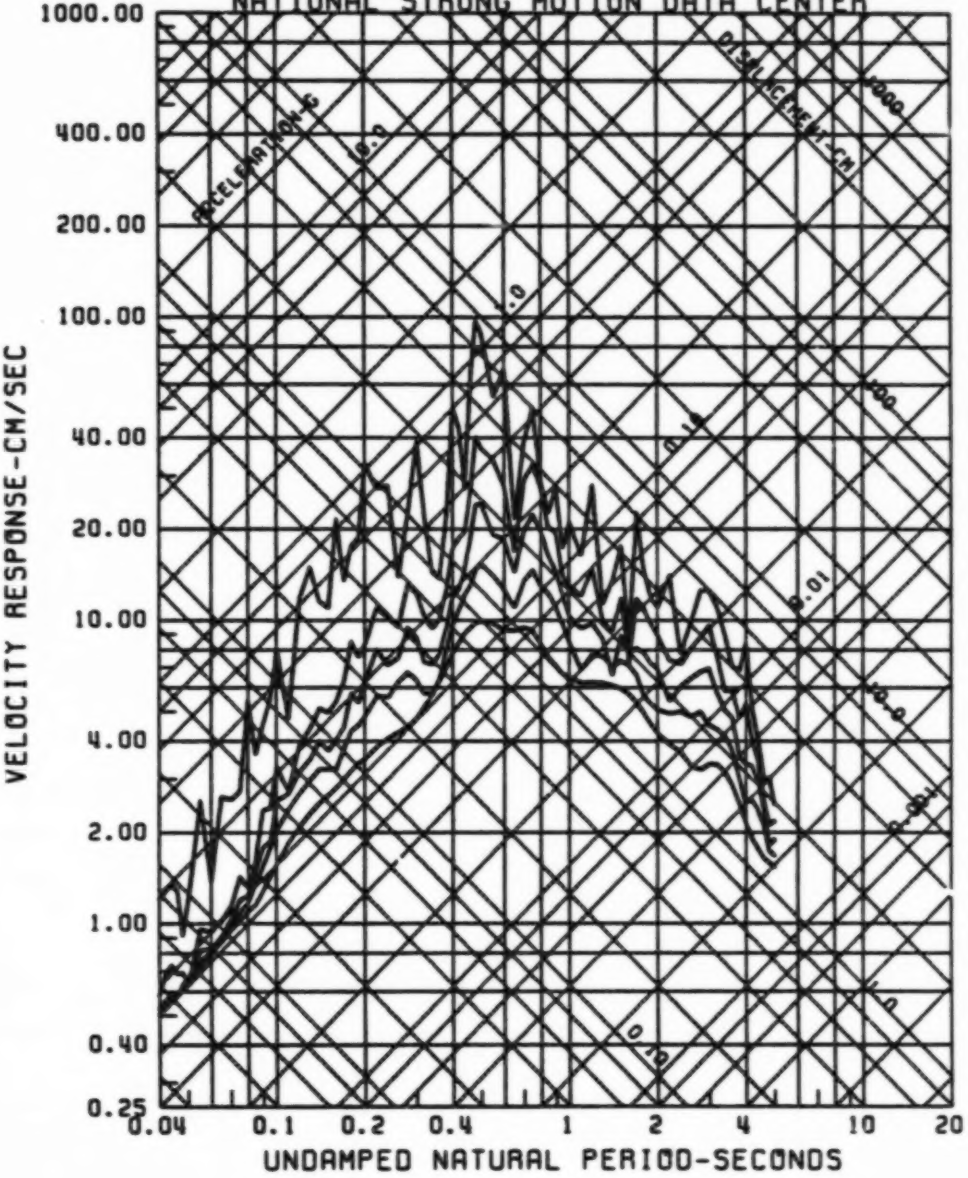
RESPONSE SPECTRA

VINA DEL MAR, EQ OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR), 290 DEG

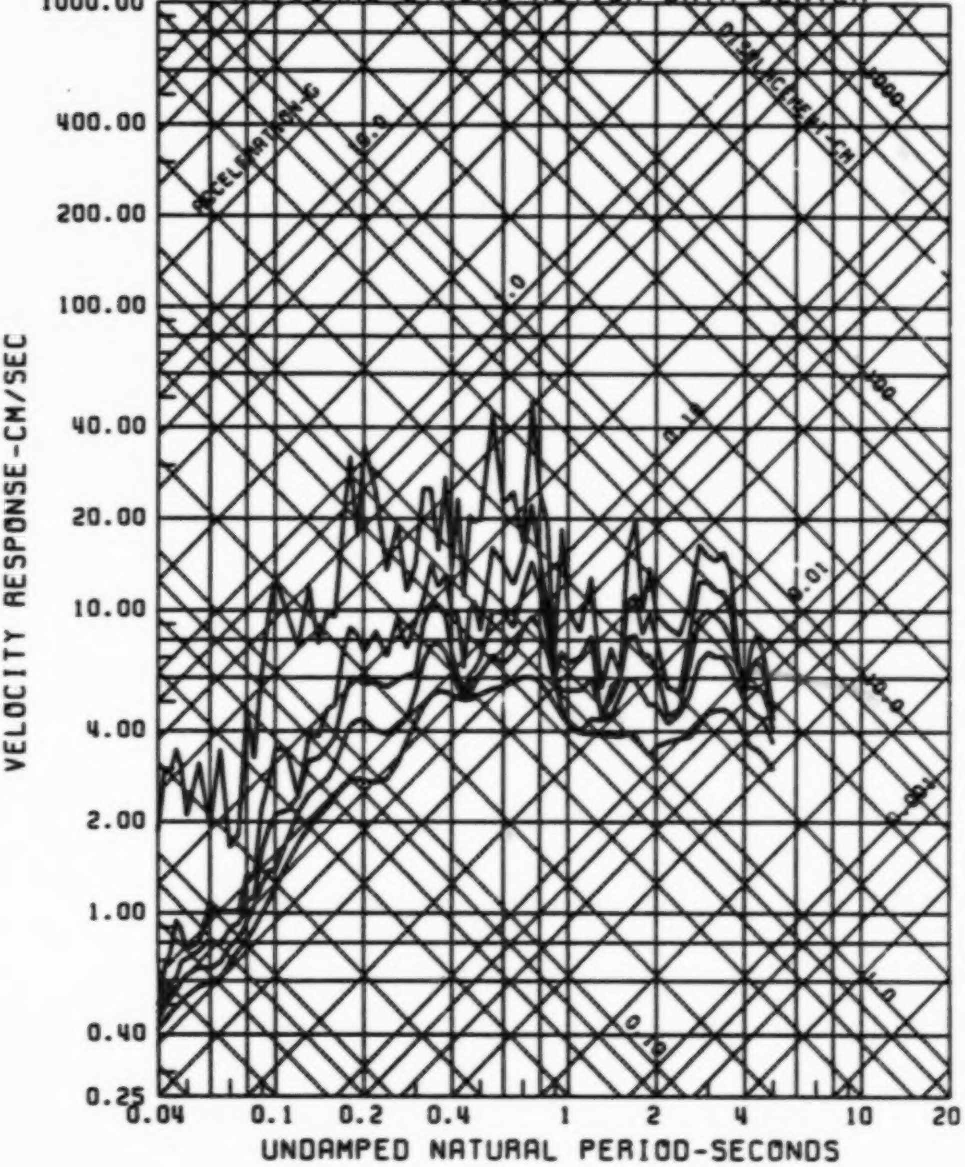
0,2,5,10,20 PERCENT CRITICAL DAMPING

FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ

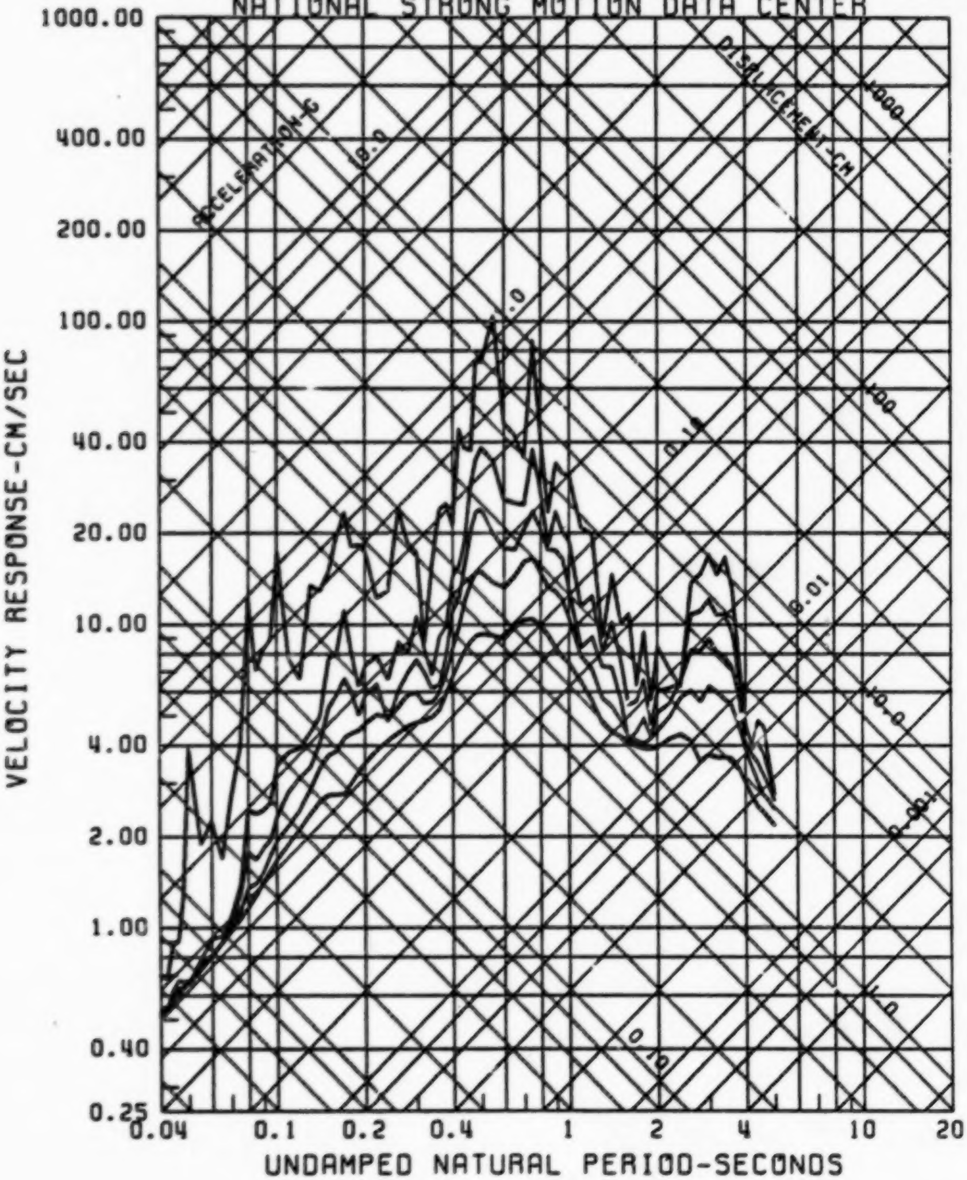
NATIONAL STRONG MOTION DATA CENTER



RESPONSE SPECTRA
VINA DEL MAR, EQ OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR), UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

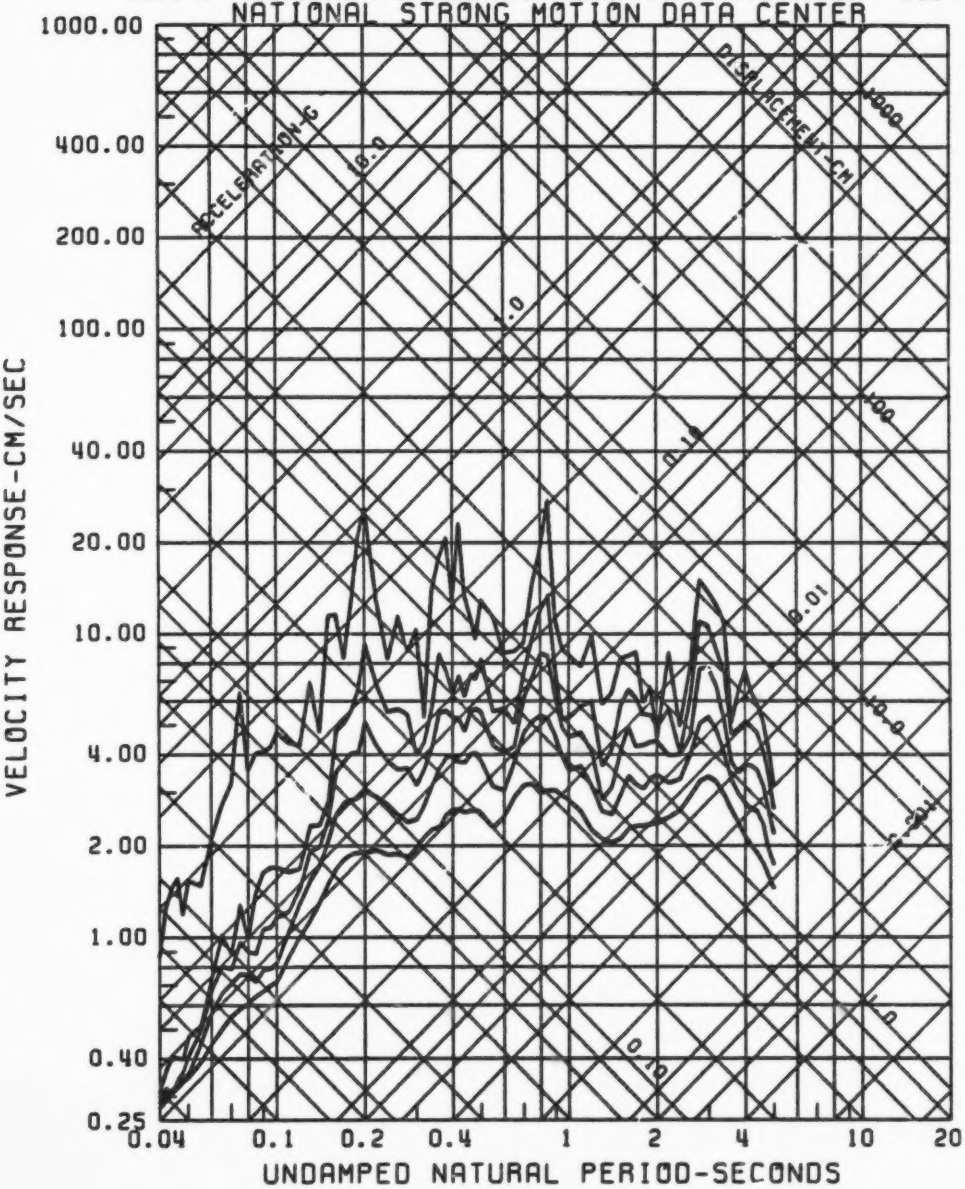


RESPONSE SPECTRA
VINA DEL MAR, EQ OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR), 200 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER

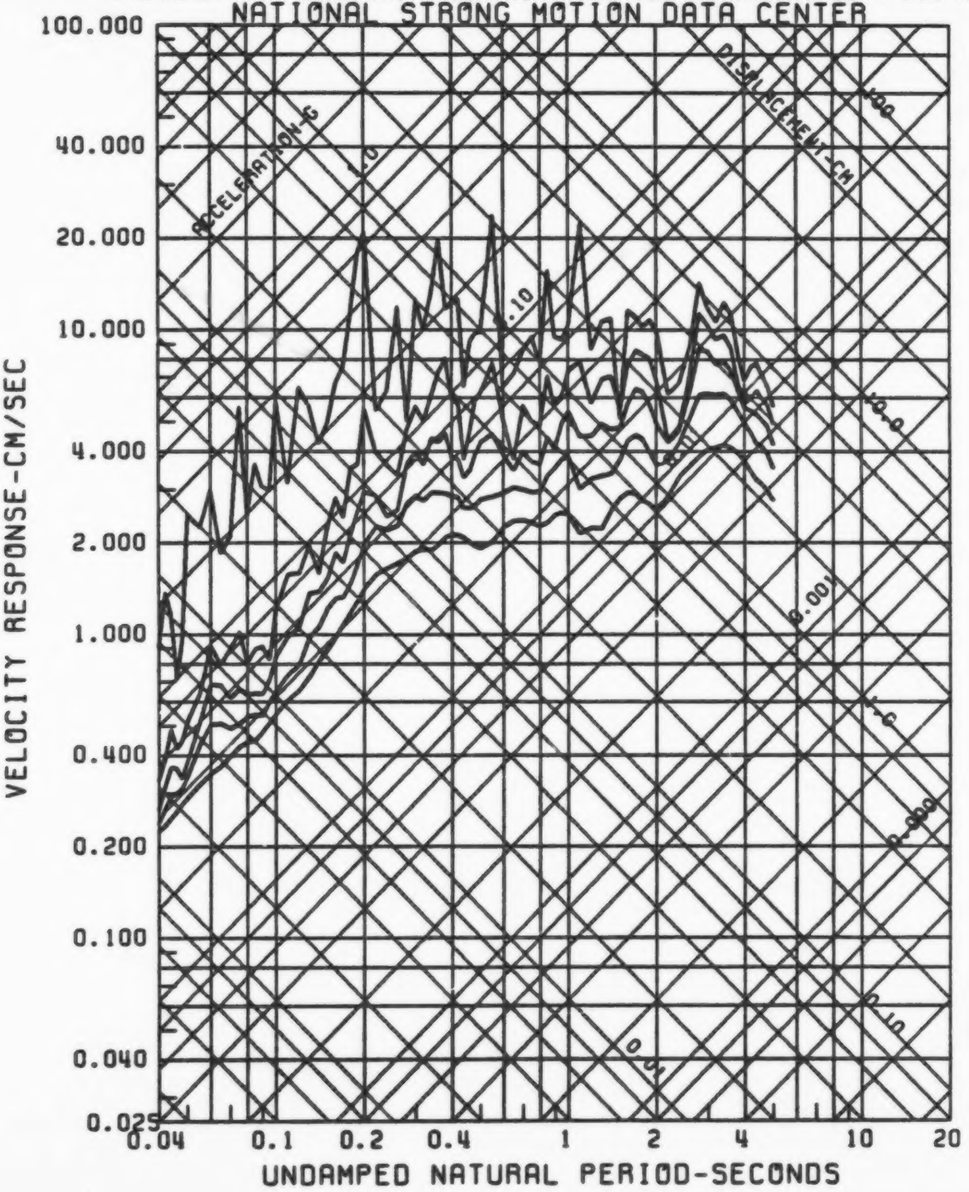


RESPONSE SPECTRA

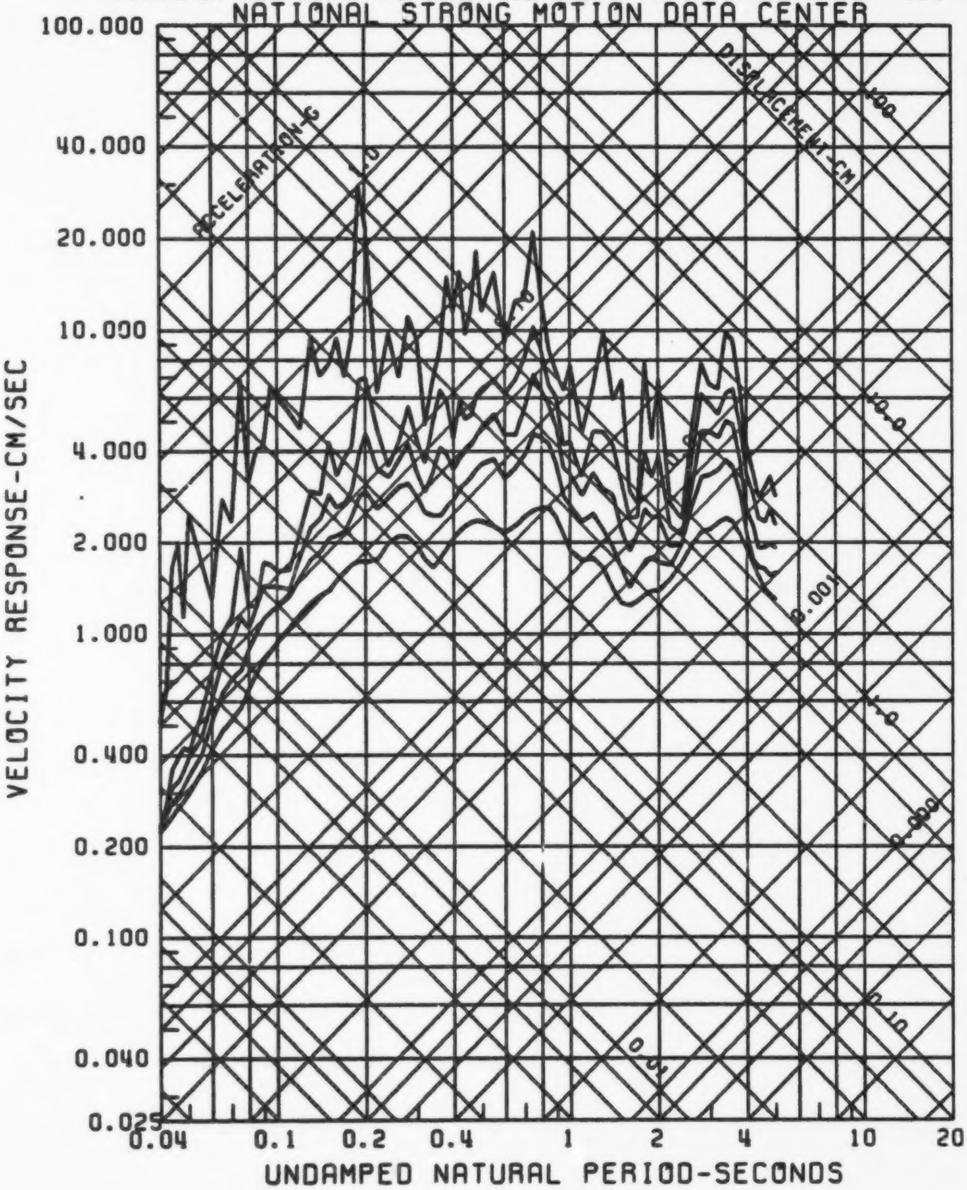
VALPARAISO, U.T.F.S.M., EQ OF MAR 3, 1985, 1ST AFTERSHOCK (1 HR), 160 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



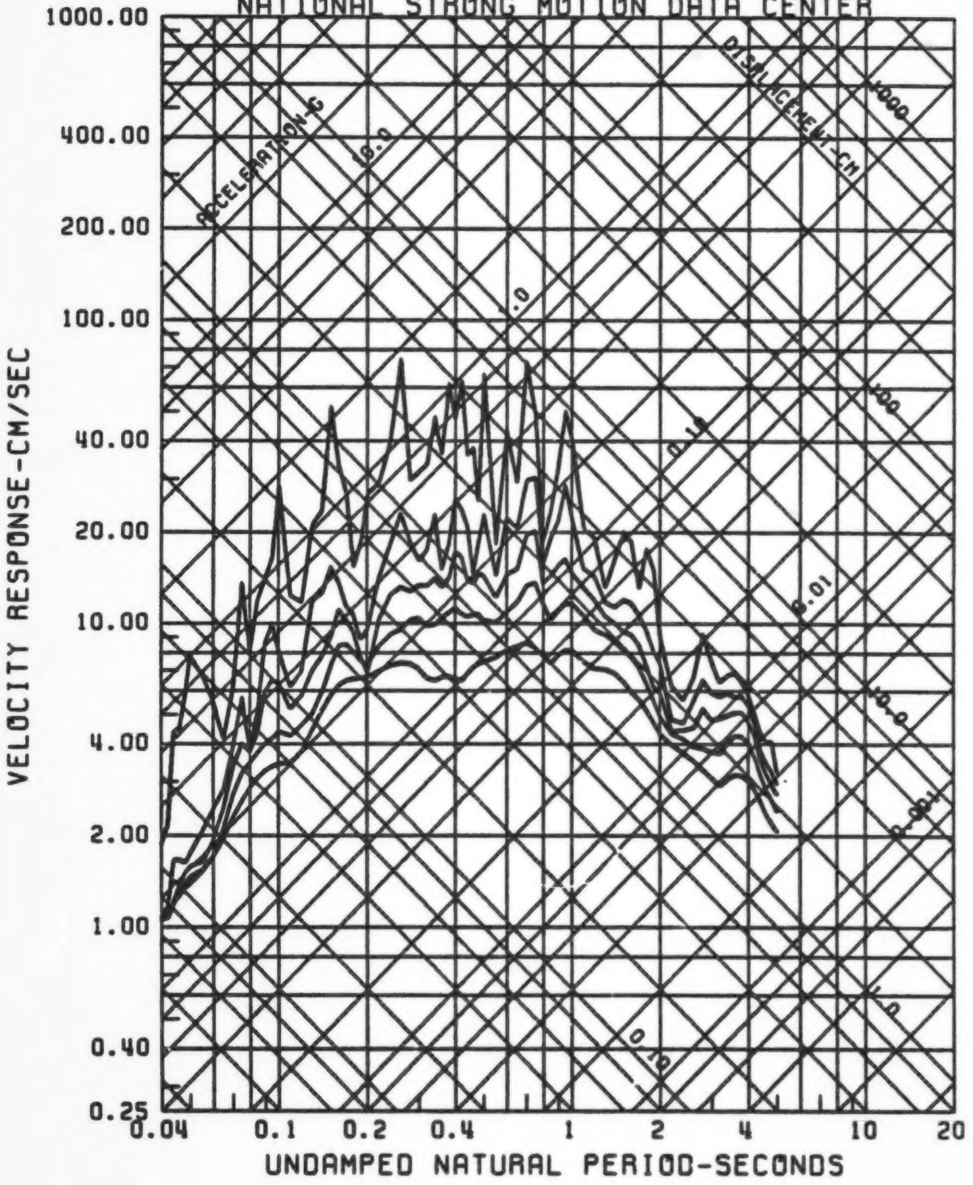
RESPONSE SPECTRA
VALPARAISO, U.T.F,S.M., EQ OF MAR 3, 1985, 1ST AFTERSHOCK (1 HR), UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



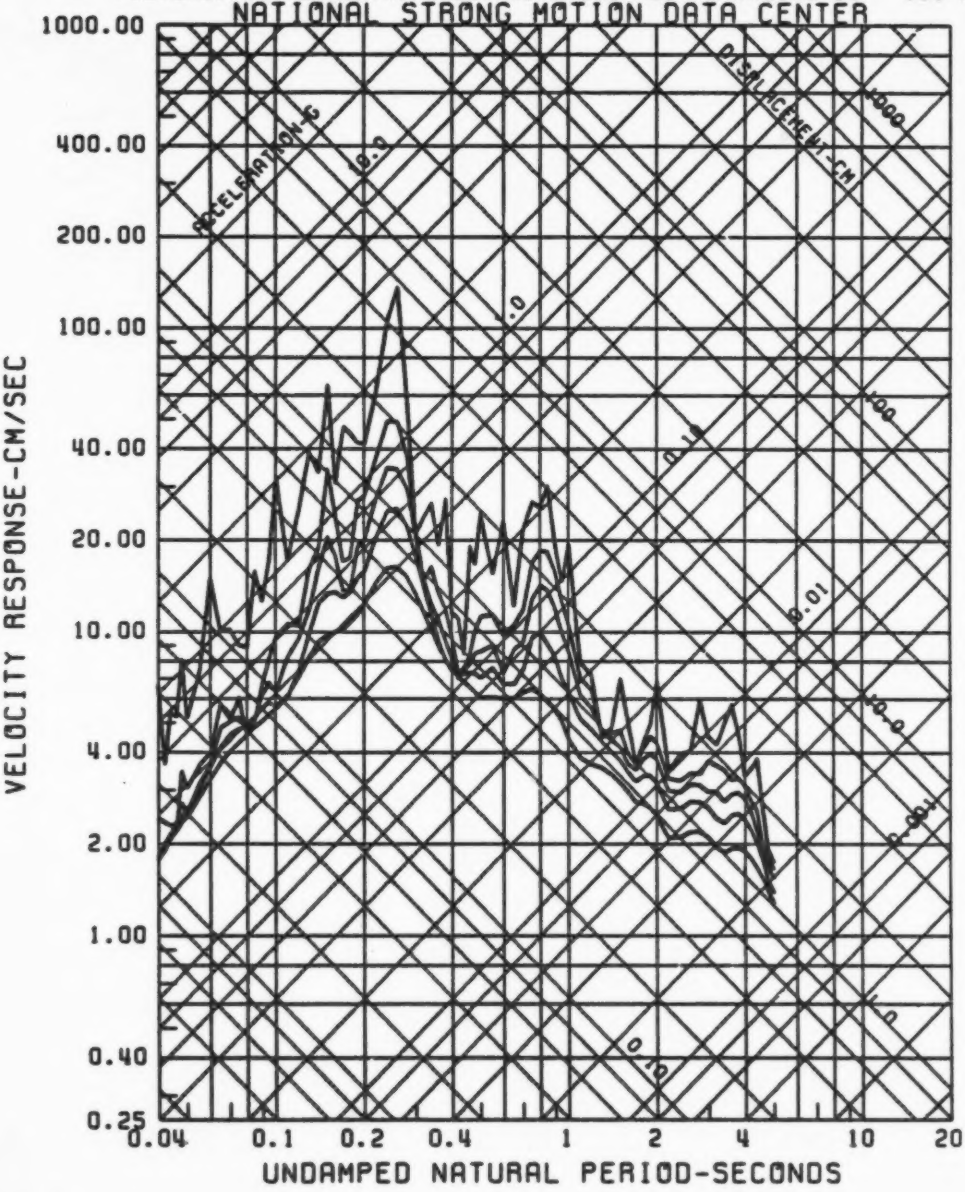
RESPONSE SPECTRA
VALPARAISO, U.T.F,S.M., EQ OF MAR 3, 1985, 1ST AFTERSHOCK (1 HR), 070 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



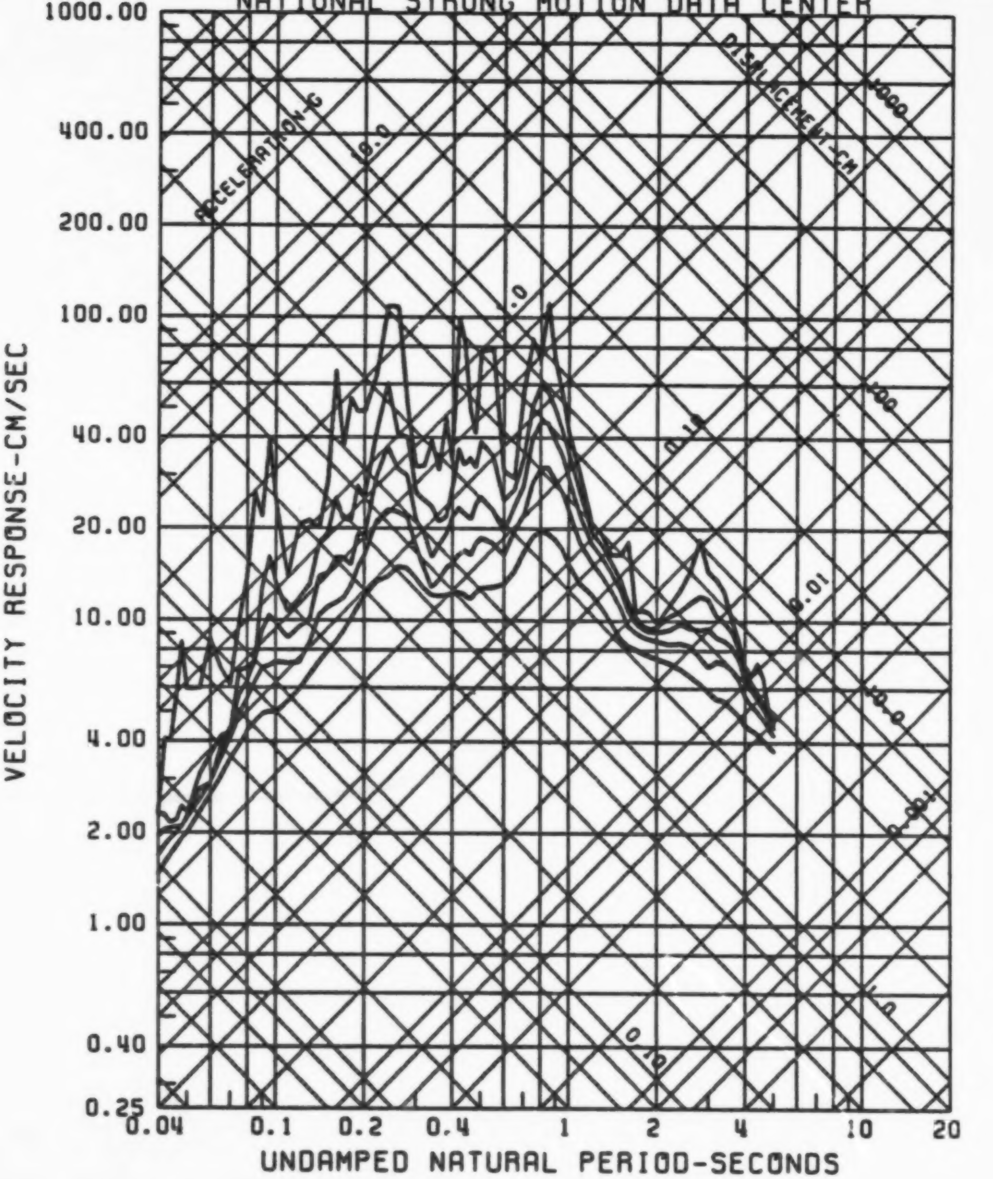
RESPONSE SPECTRA
LLOLLEO, EARTHQUAKE OF APRIL 8, 1985, 100 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



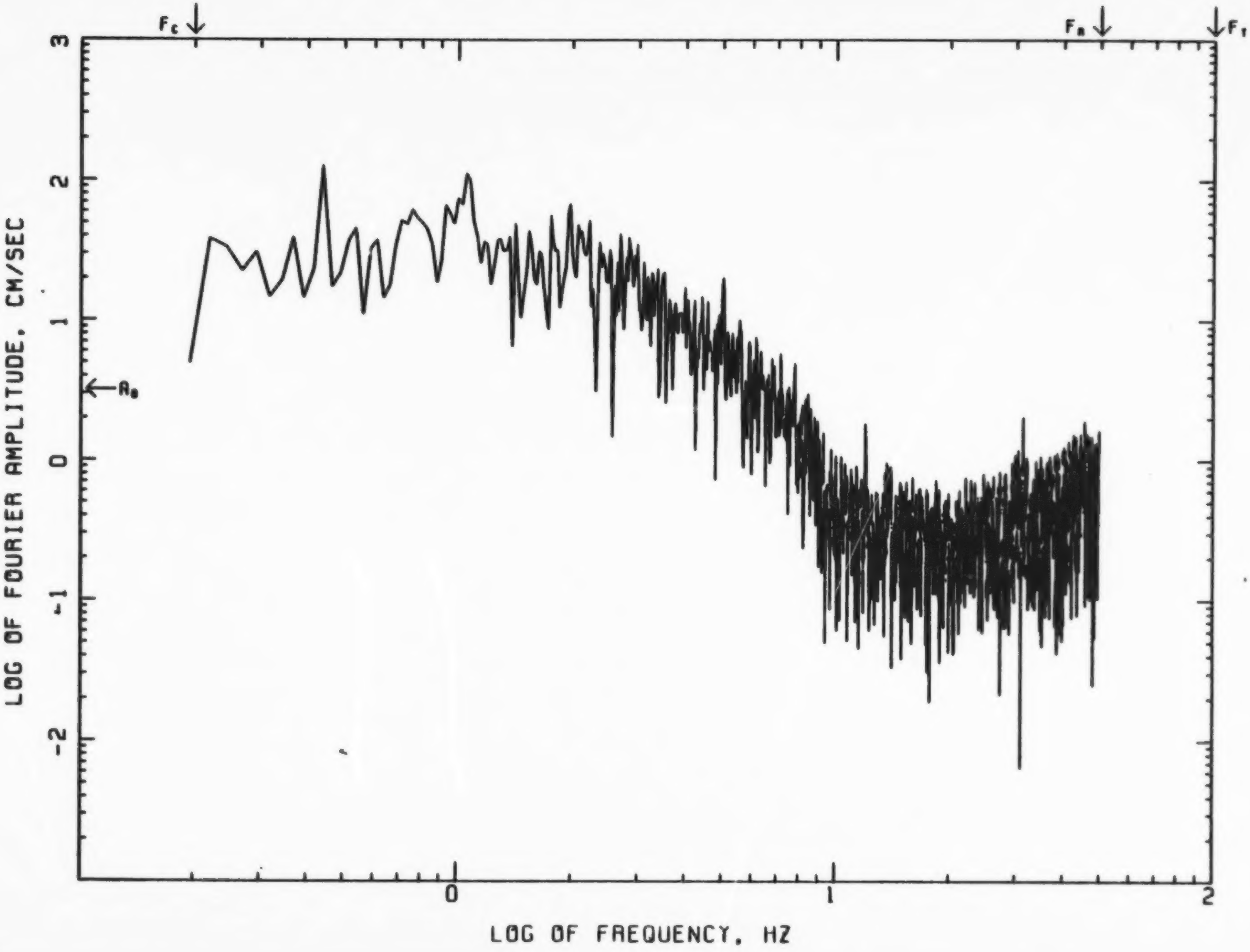
RESPONSE SPECTRA
LLOLLEO, EARTHQUAKE OF APRIL 8, 1985, UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



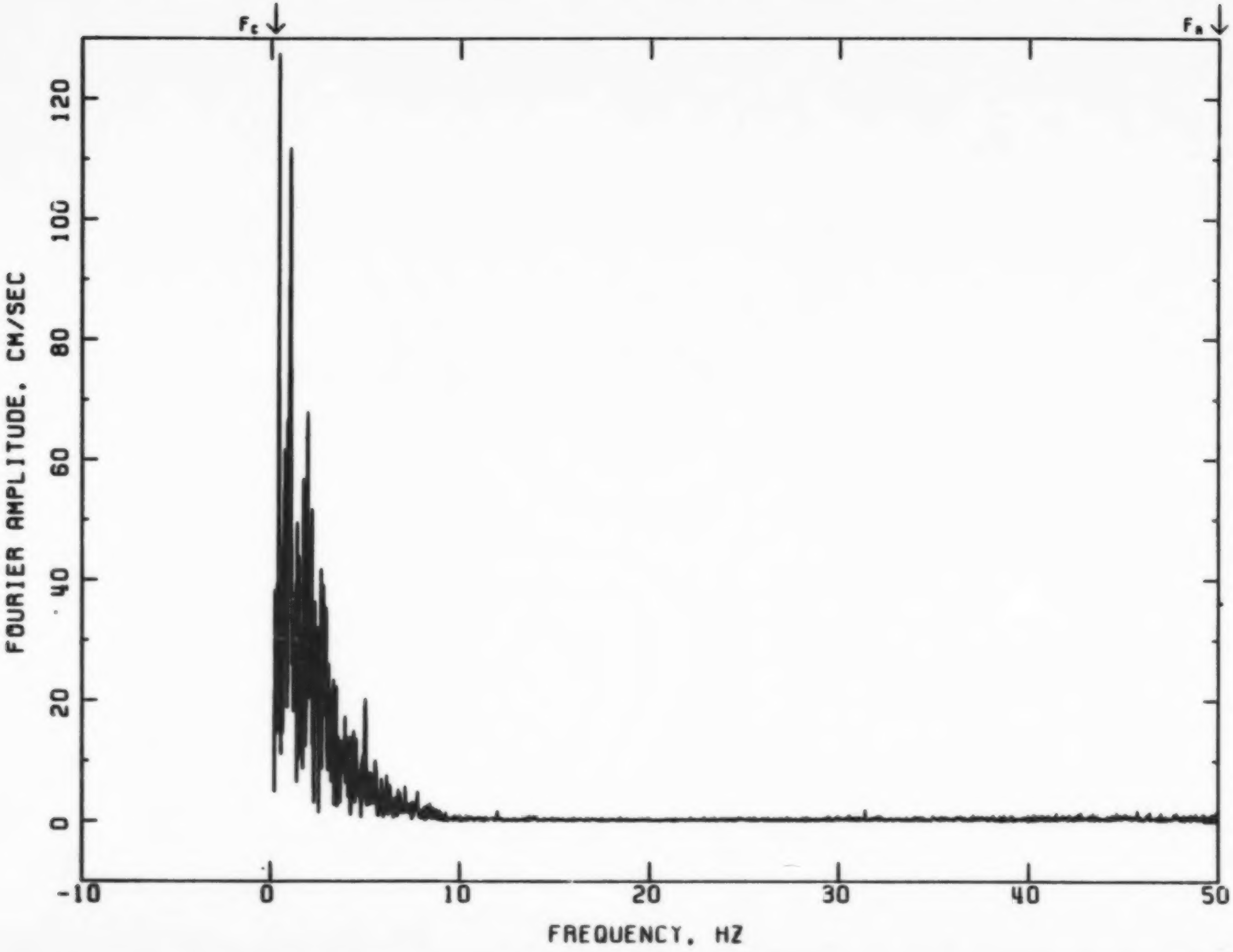
RESPONSE SPECTRA
LLOLLEO, EARTHQUAKE OF APRIL 8, 1985, 010 DEG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER



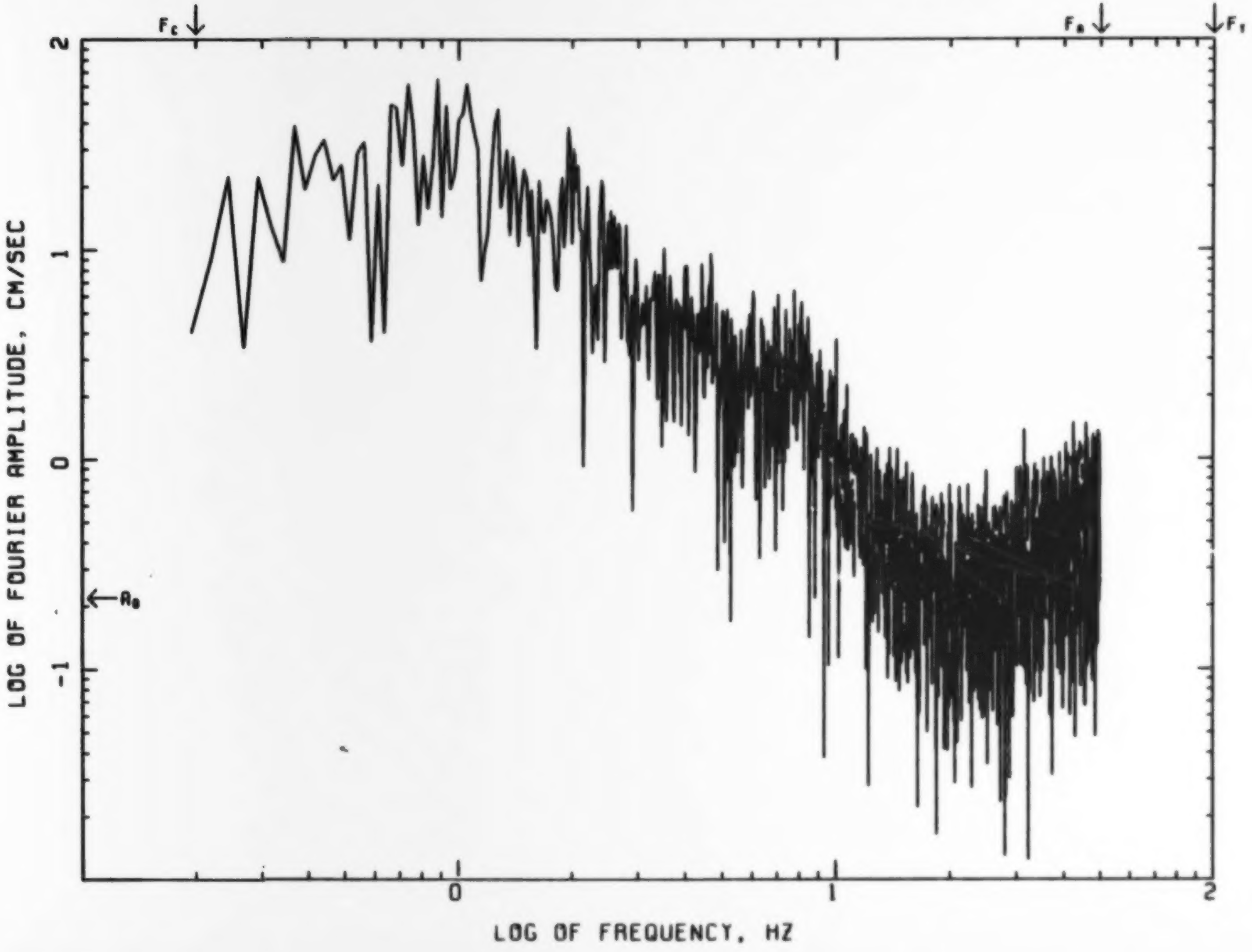
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
CHILLAN INSTITUTE
080 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



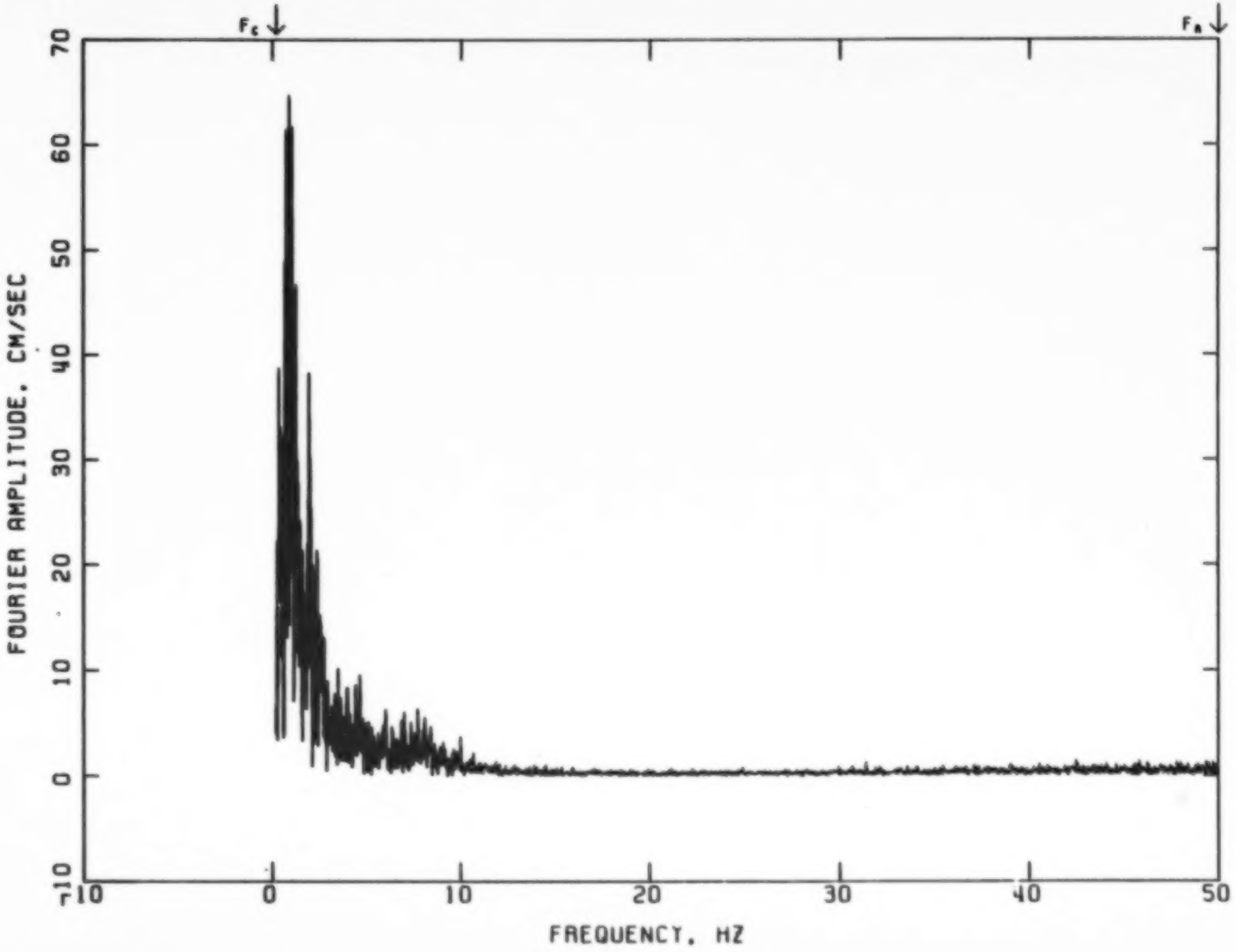
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
CHILLAN INSTITUTE
080 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



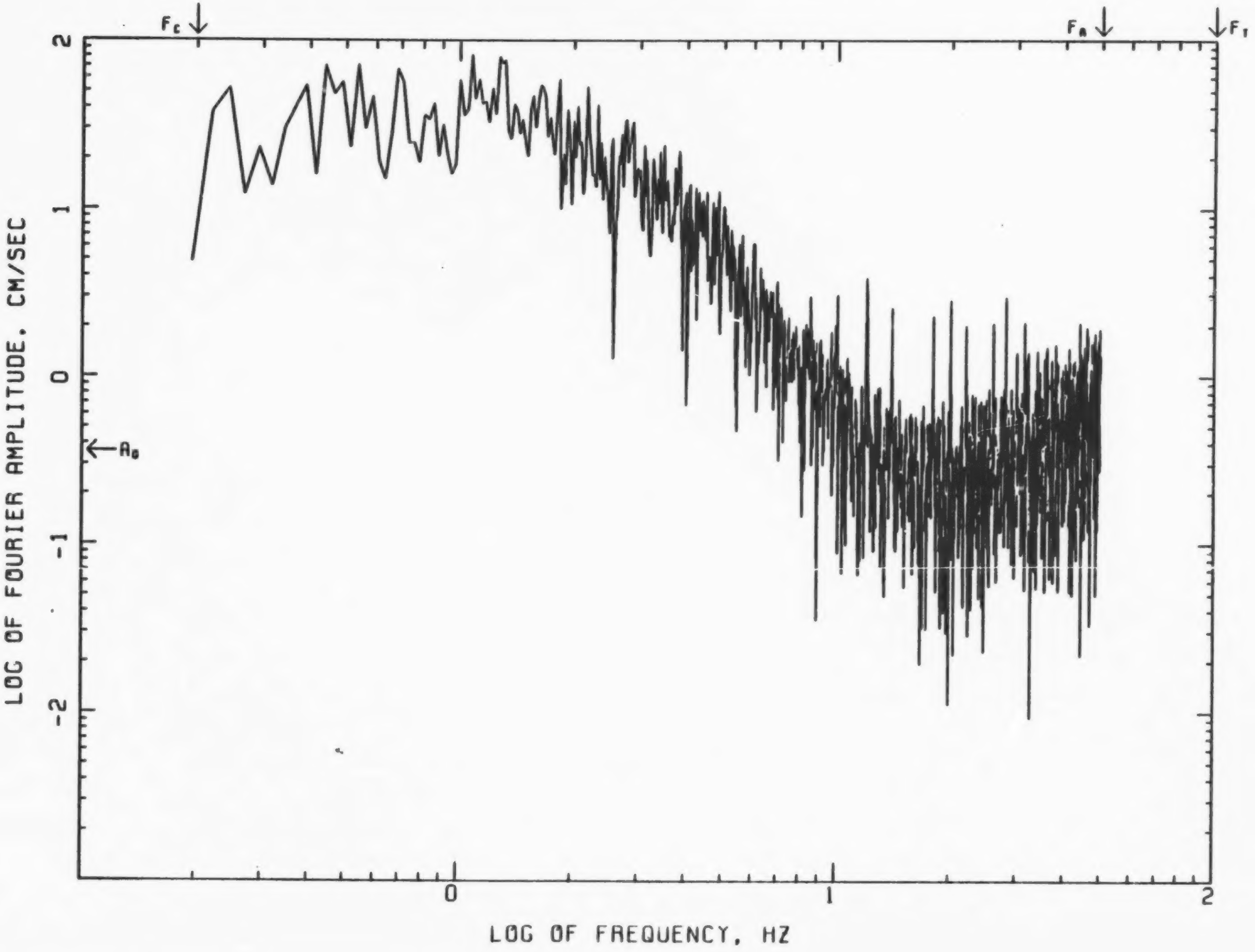
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
CHILLAN INSTITUTE
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



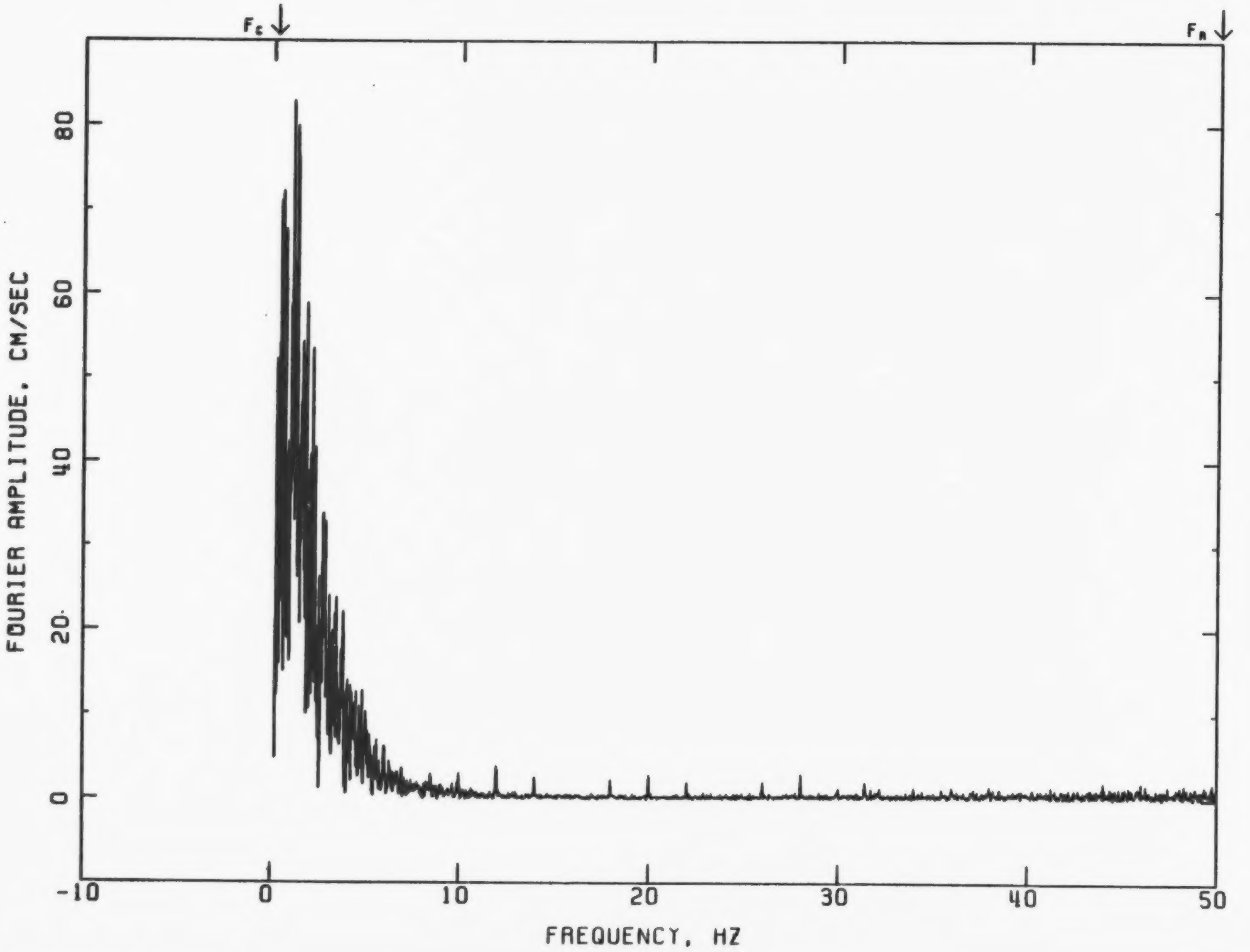
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
CHILLAN INSTITUTE
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



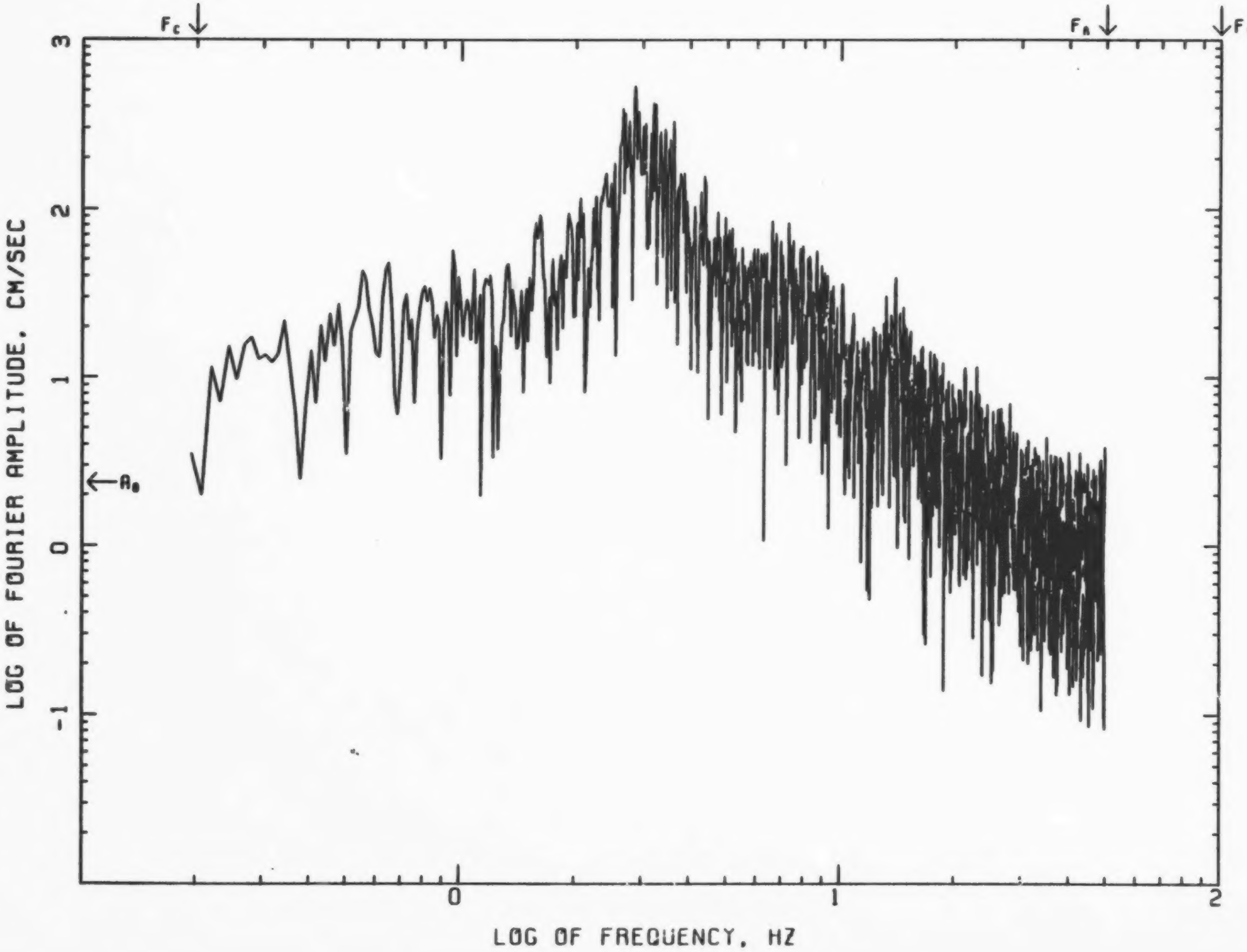
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
CHILLAN INSTITUTE
350 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



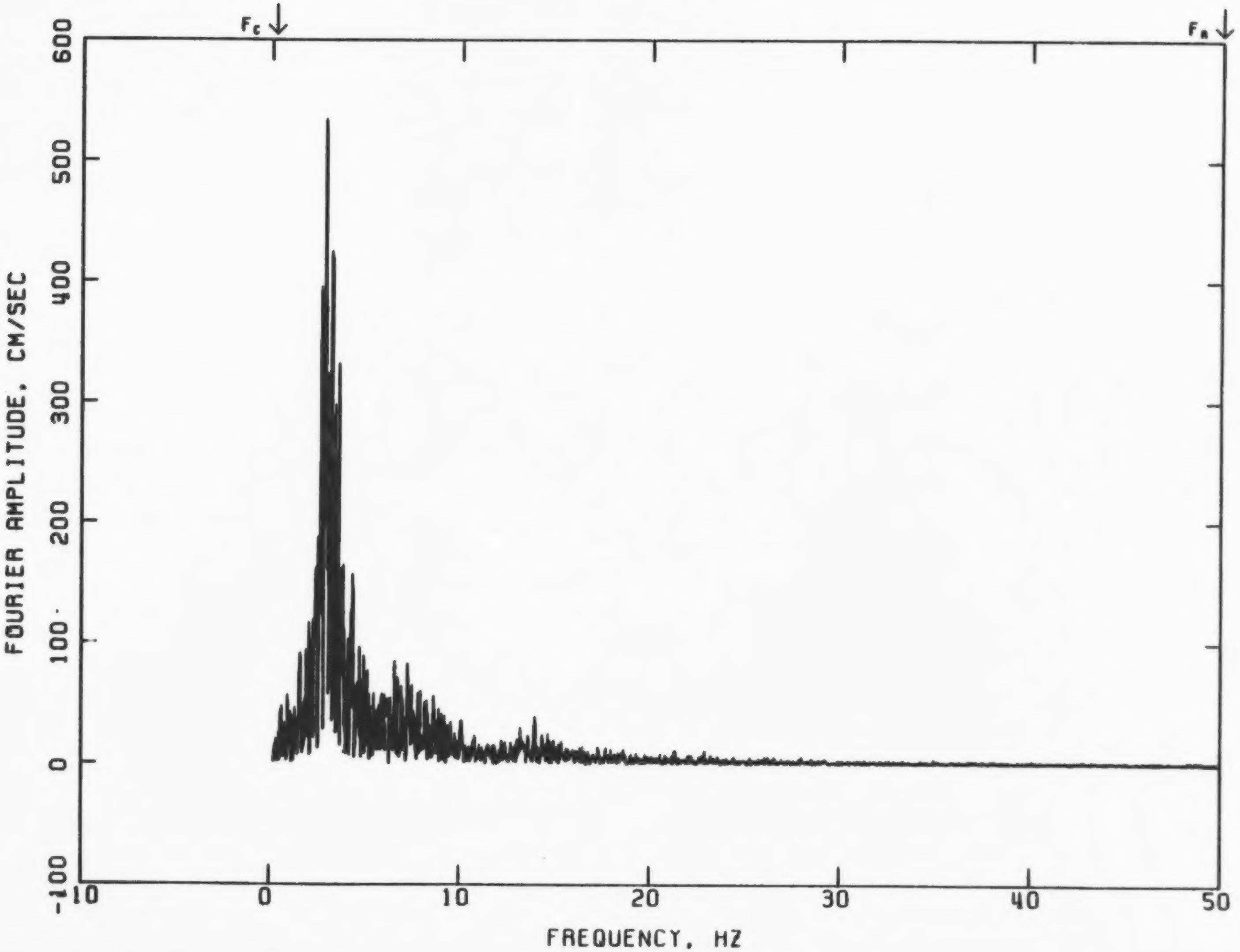
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
CHILLAN INSTITUTE
350 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



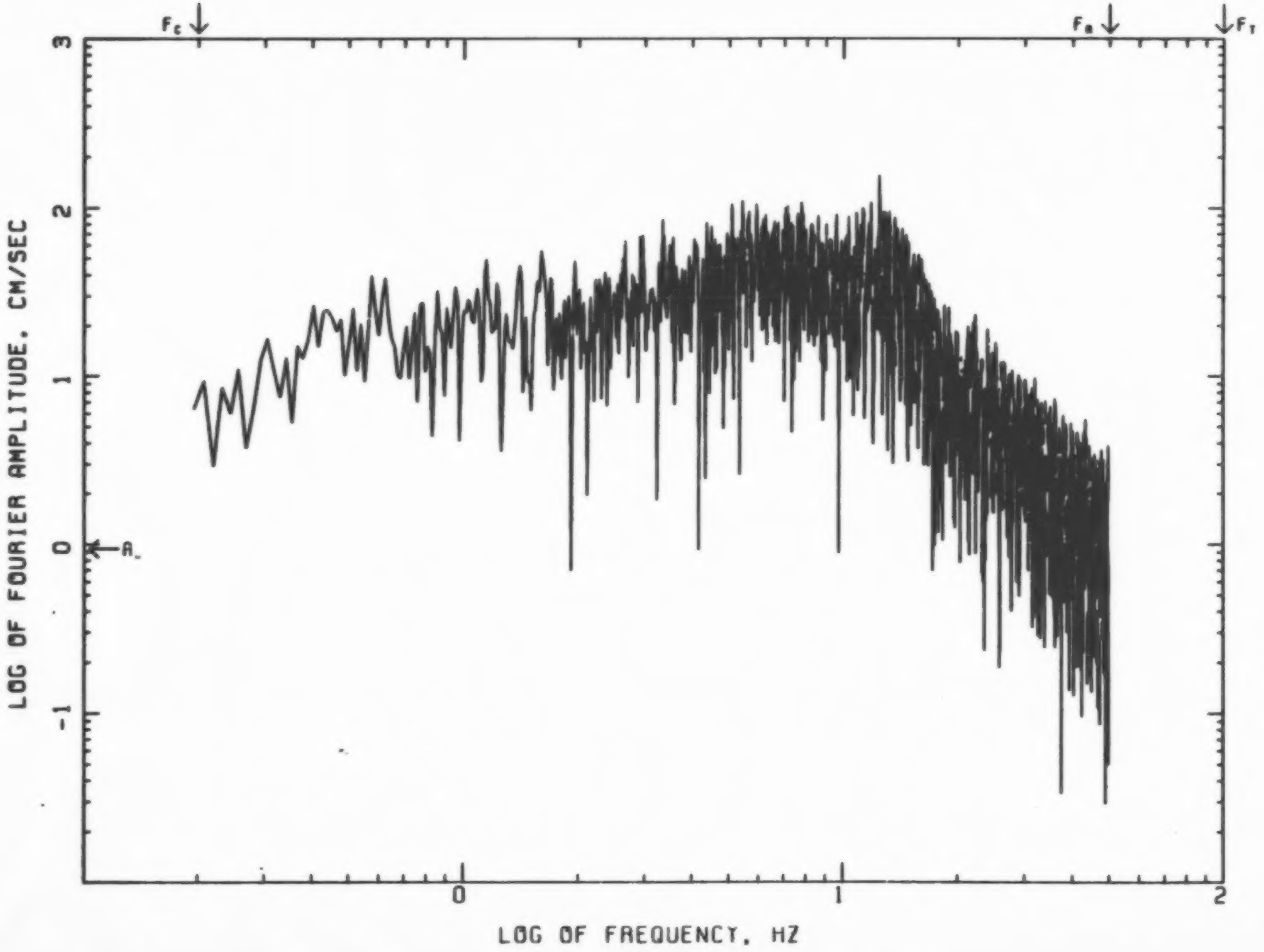
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
PAPUDO
050 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



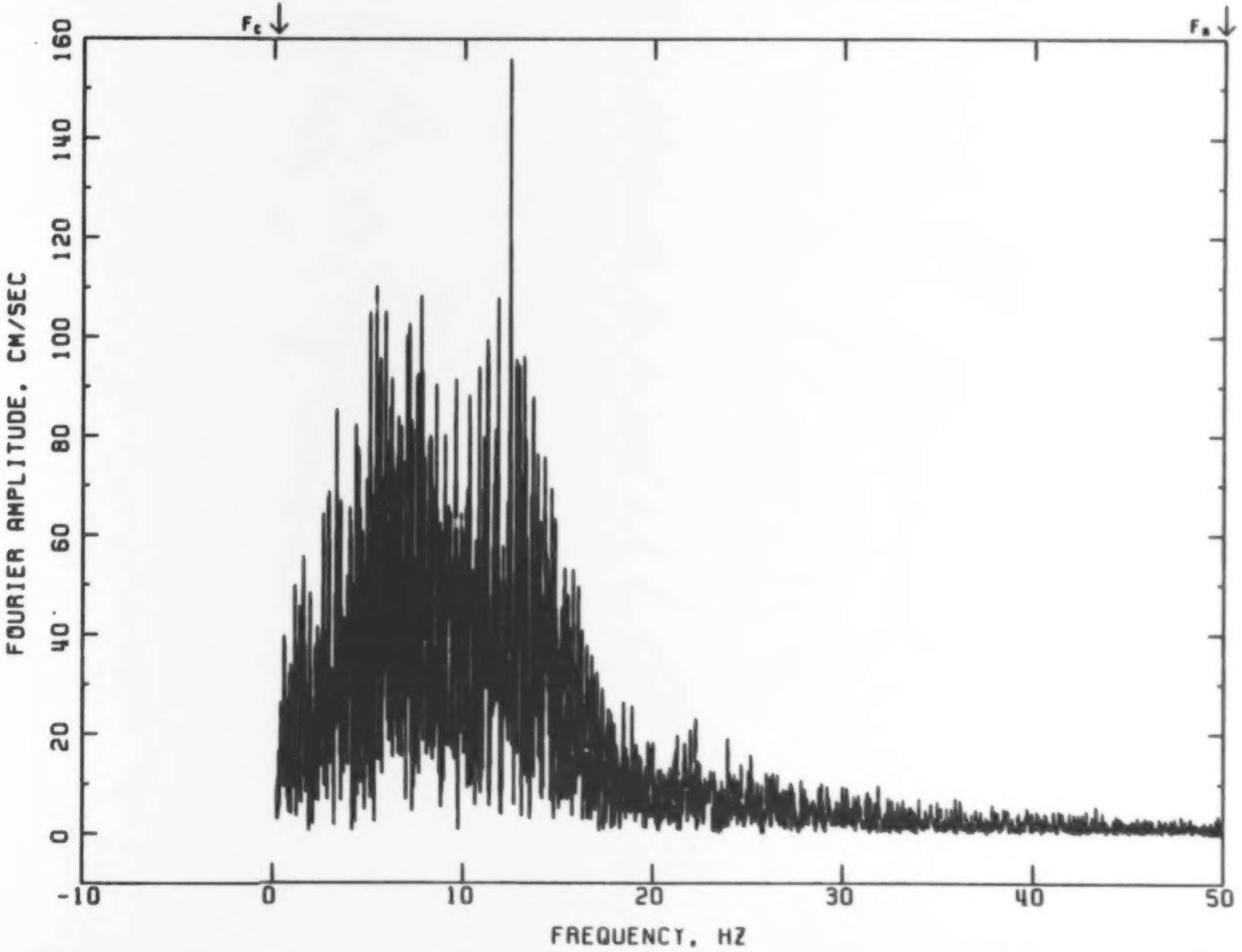
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
PAPUDO
050 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



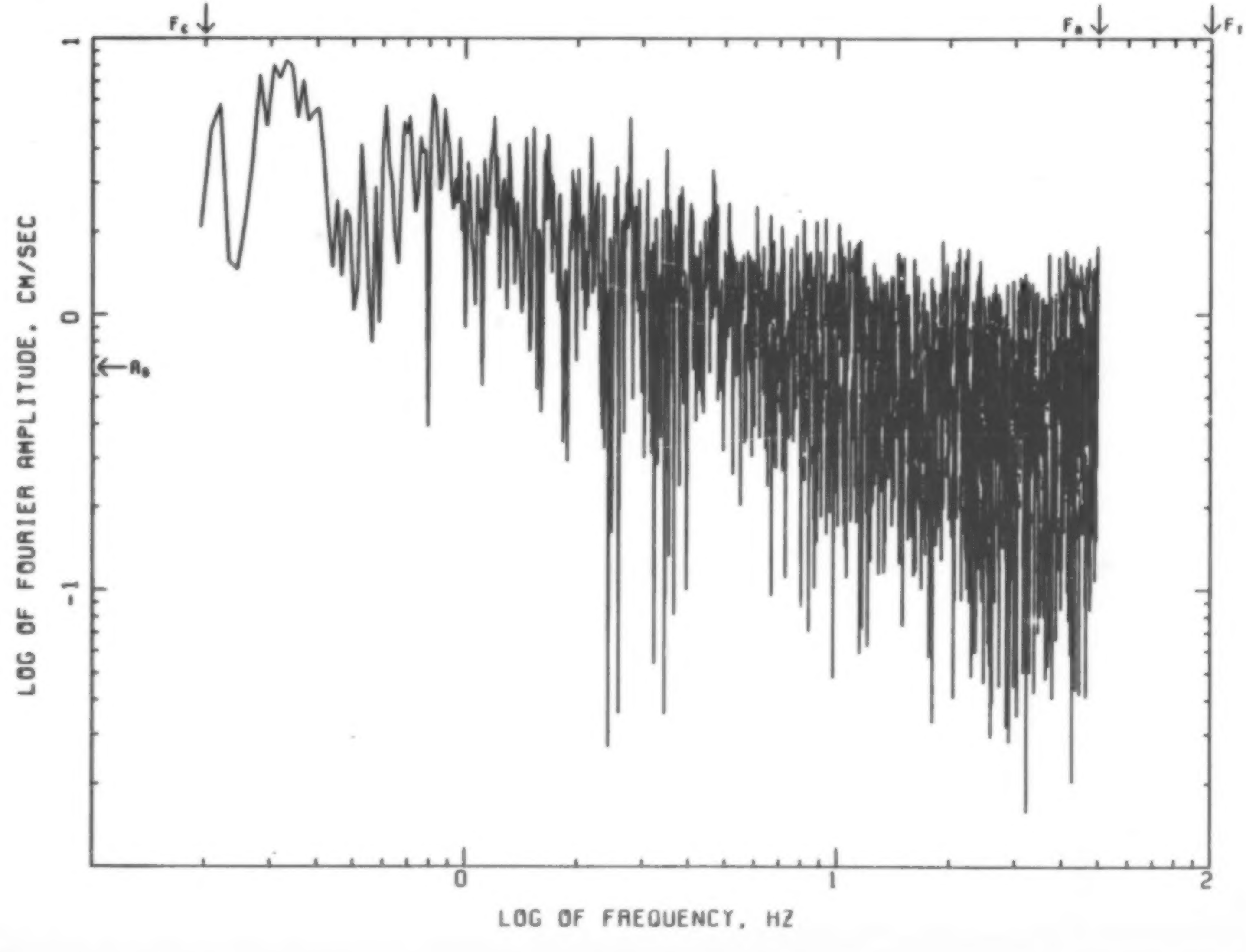
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
PAPUDO
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



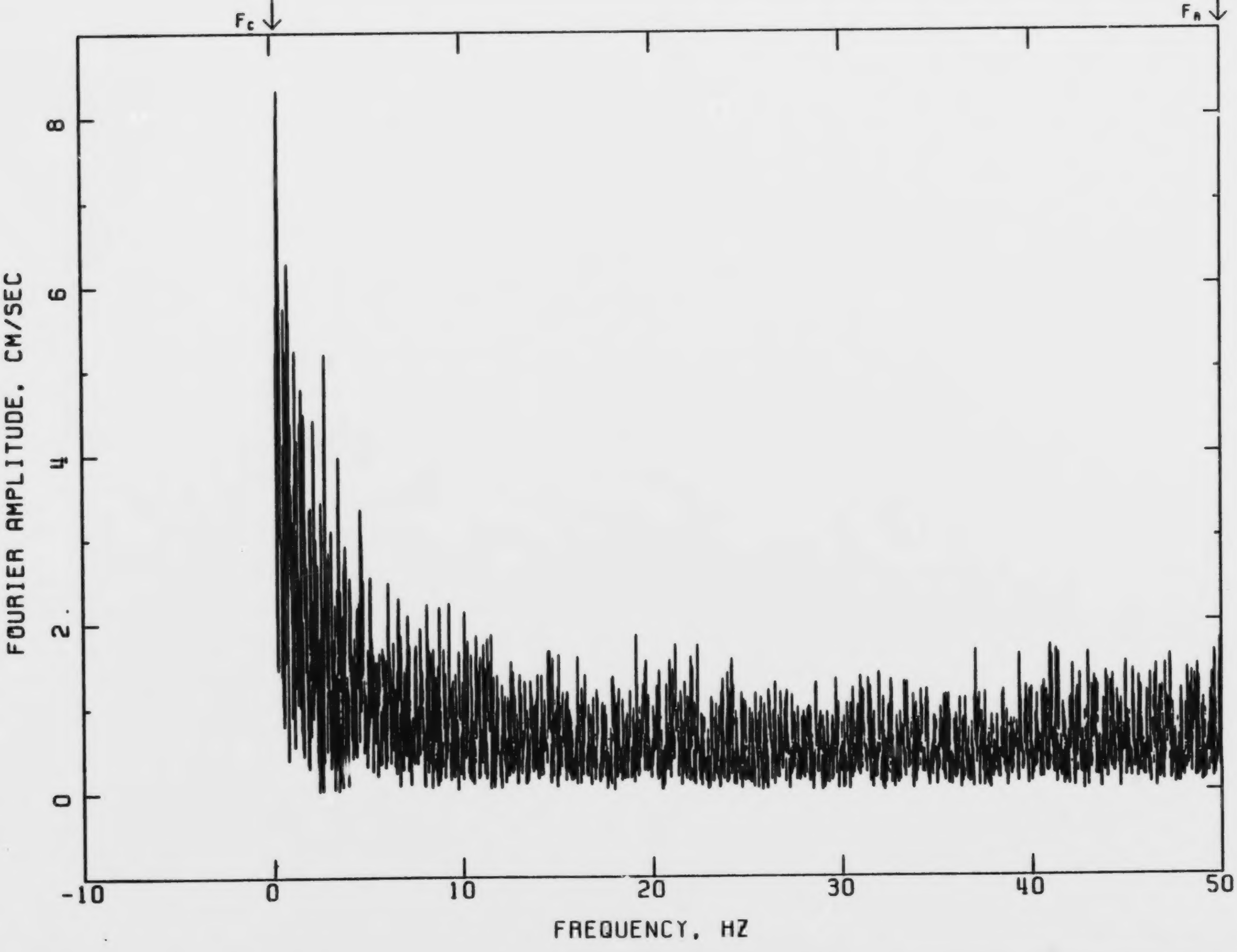
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
PAPUDO
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



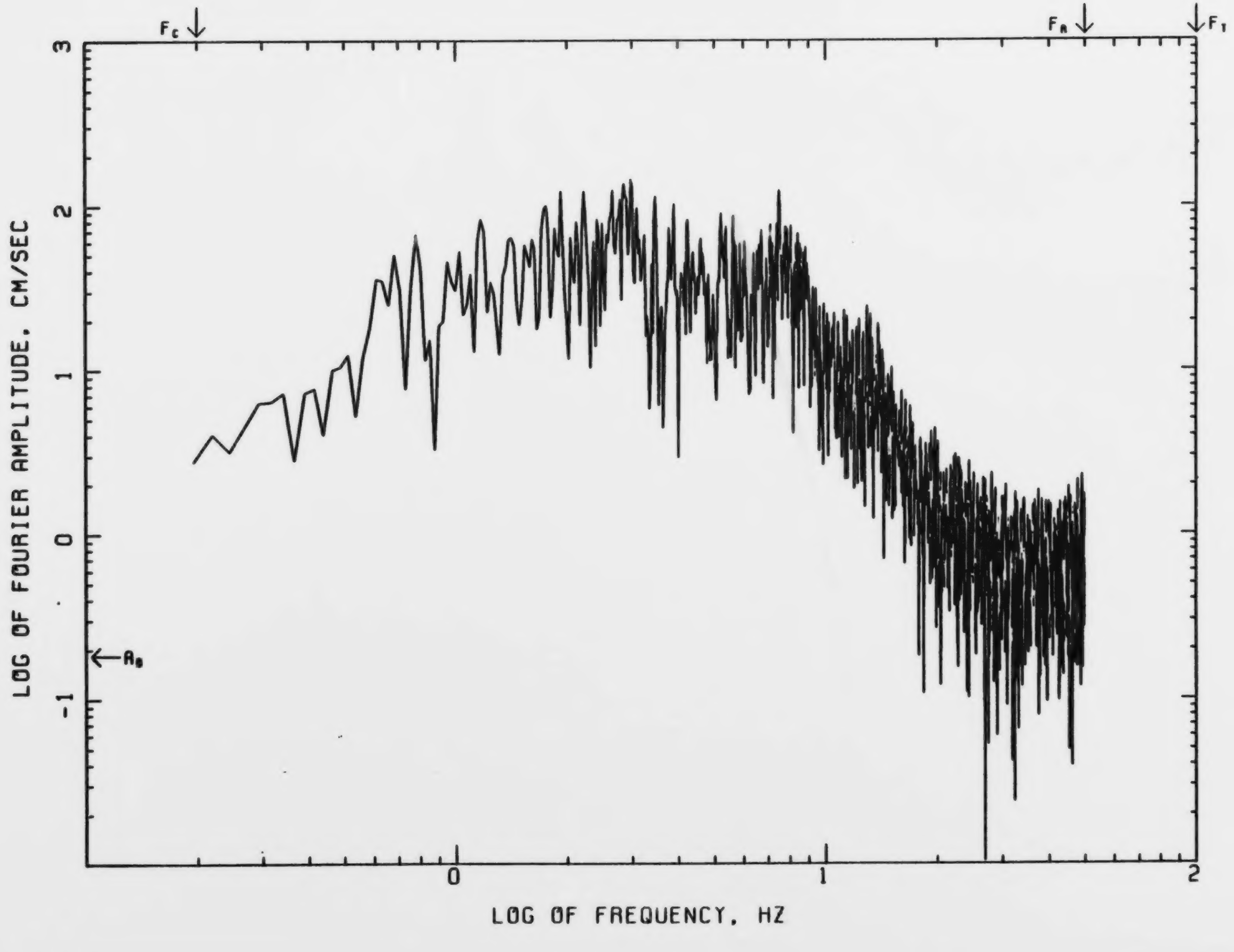
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
PAPUDO
140 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



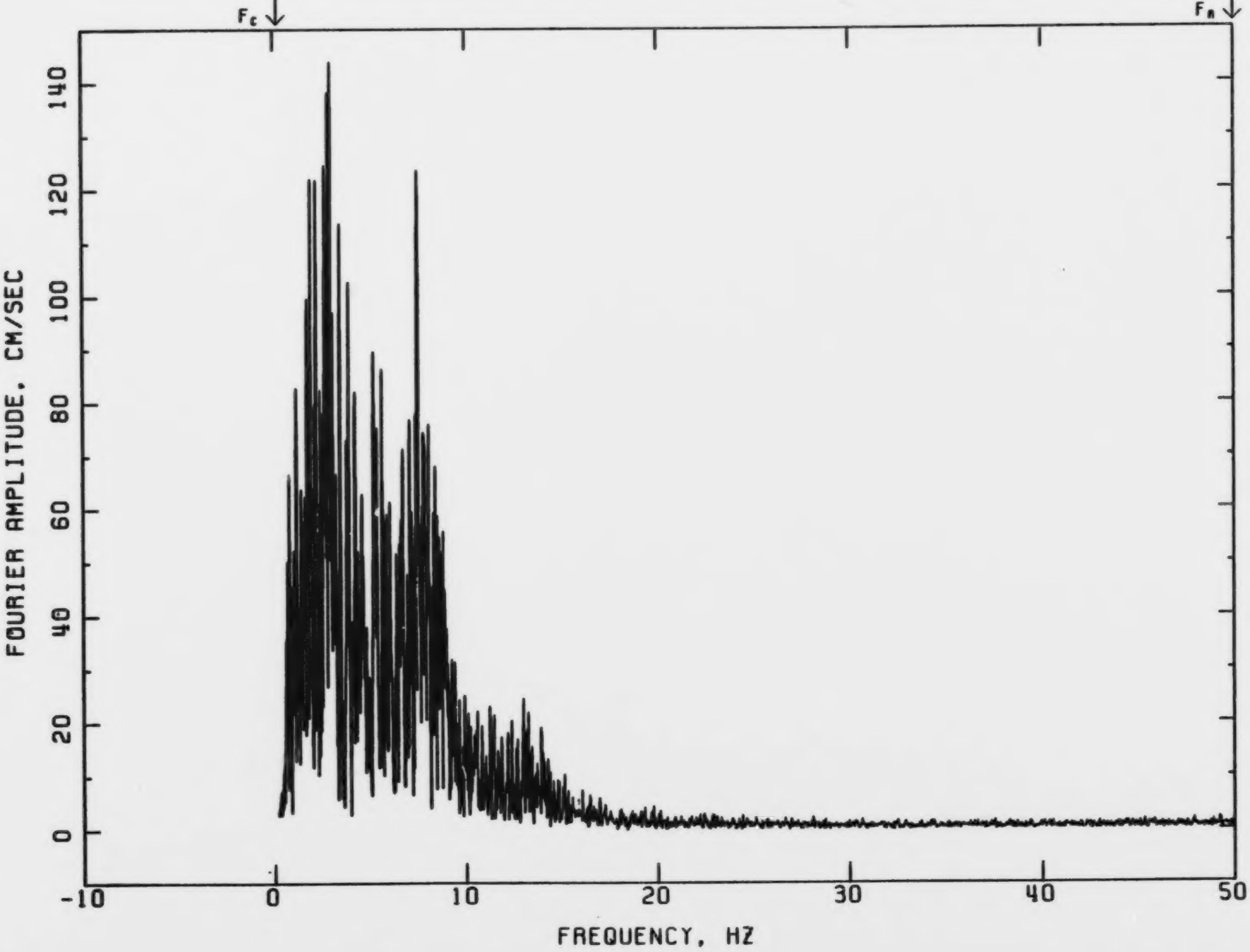
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
PAPUDO
140 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE

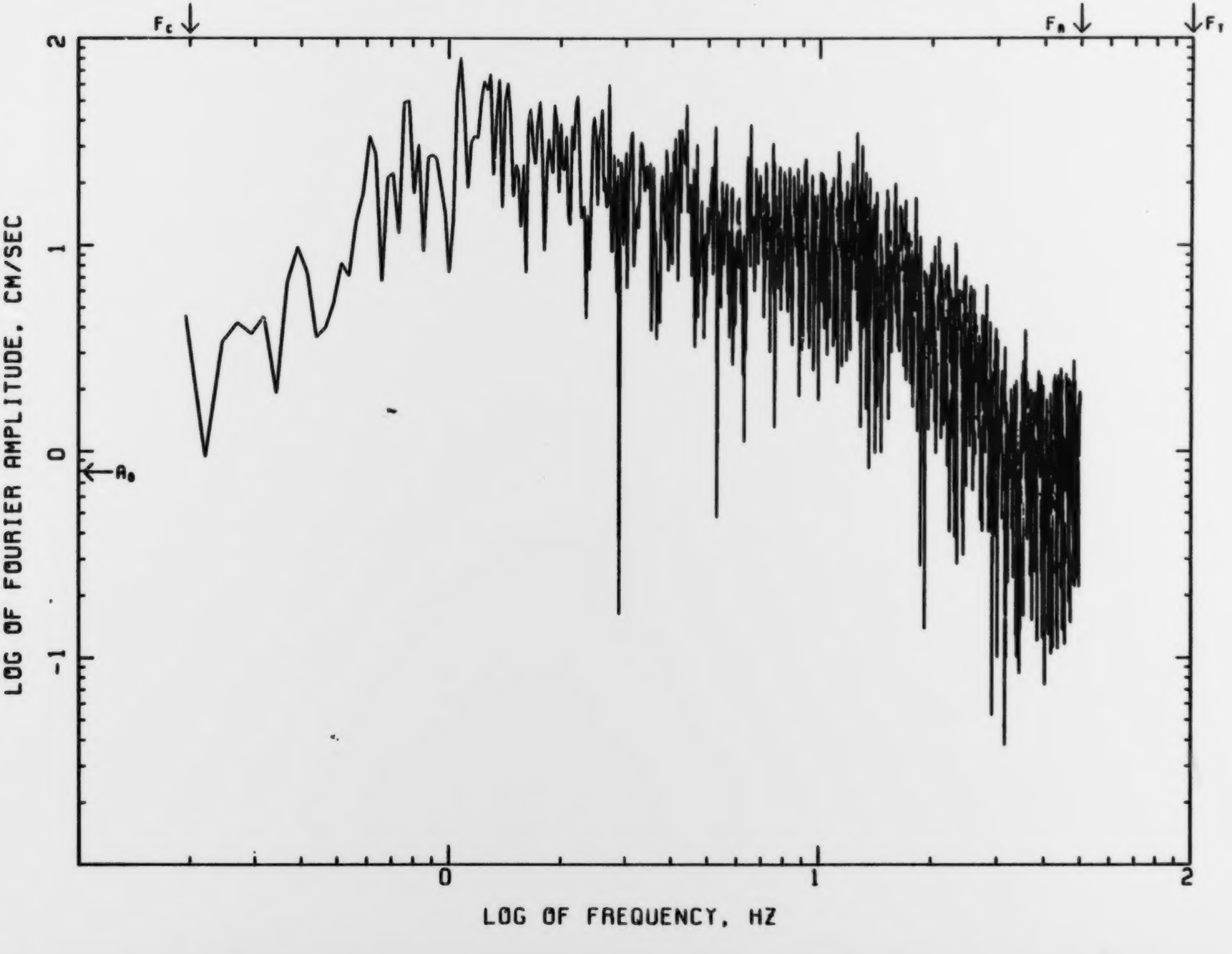


FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
TALCA
280 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



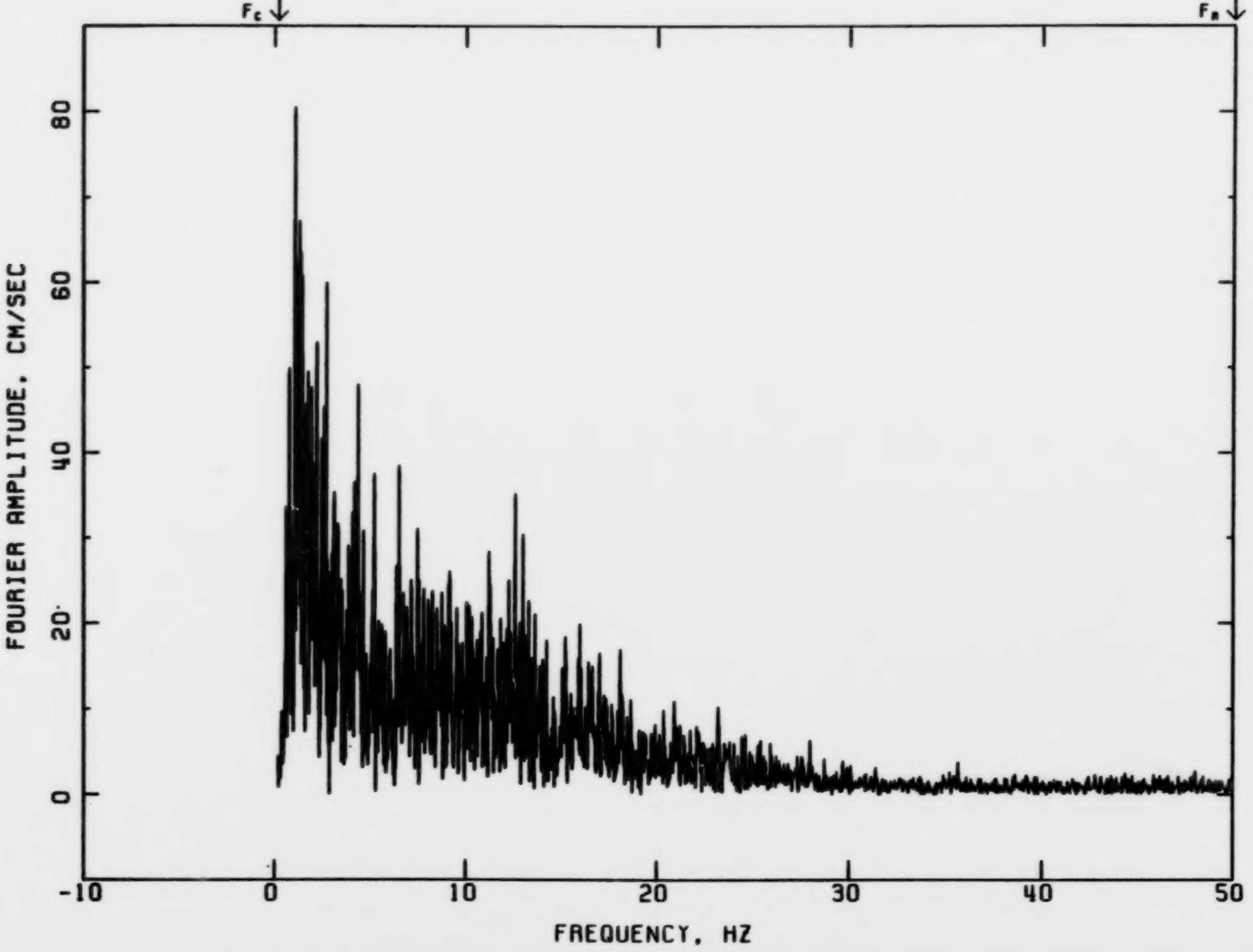
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
TALCA
280 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



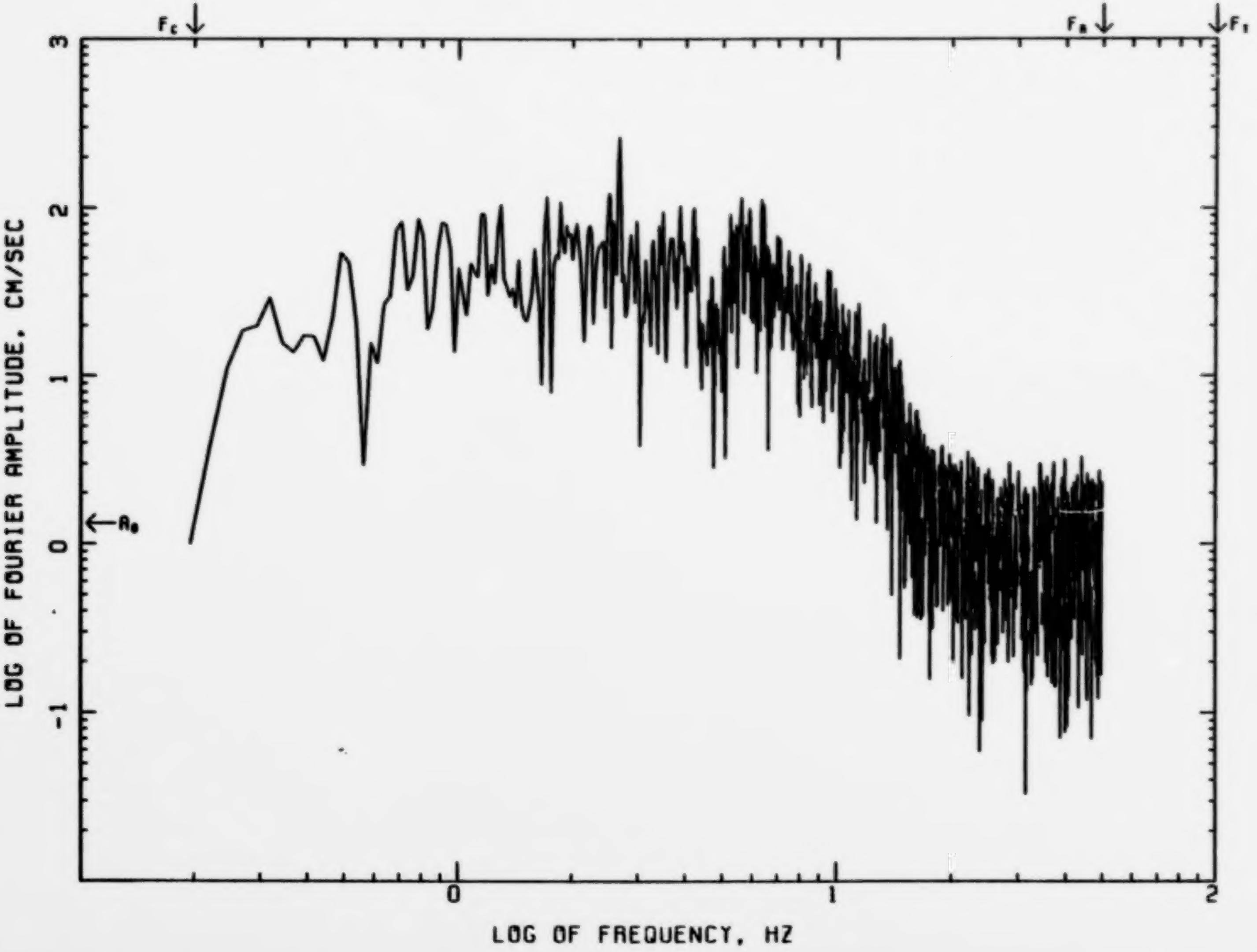


FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
TALCA
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE

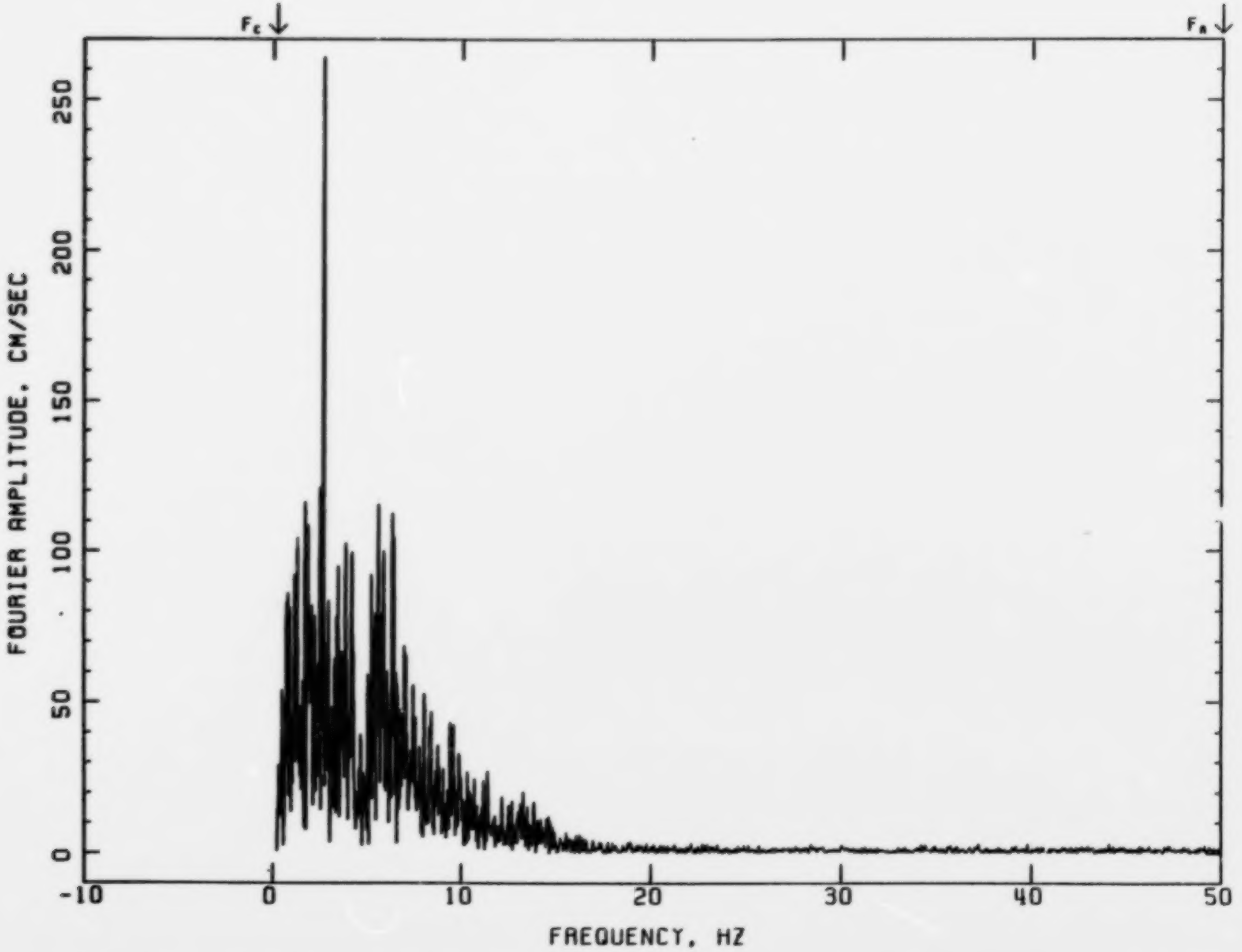
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
TALCA
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



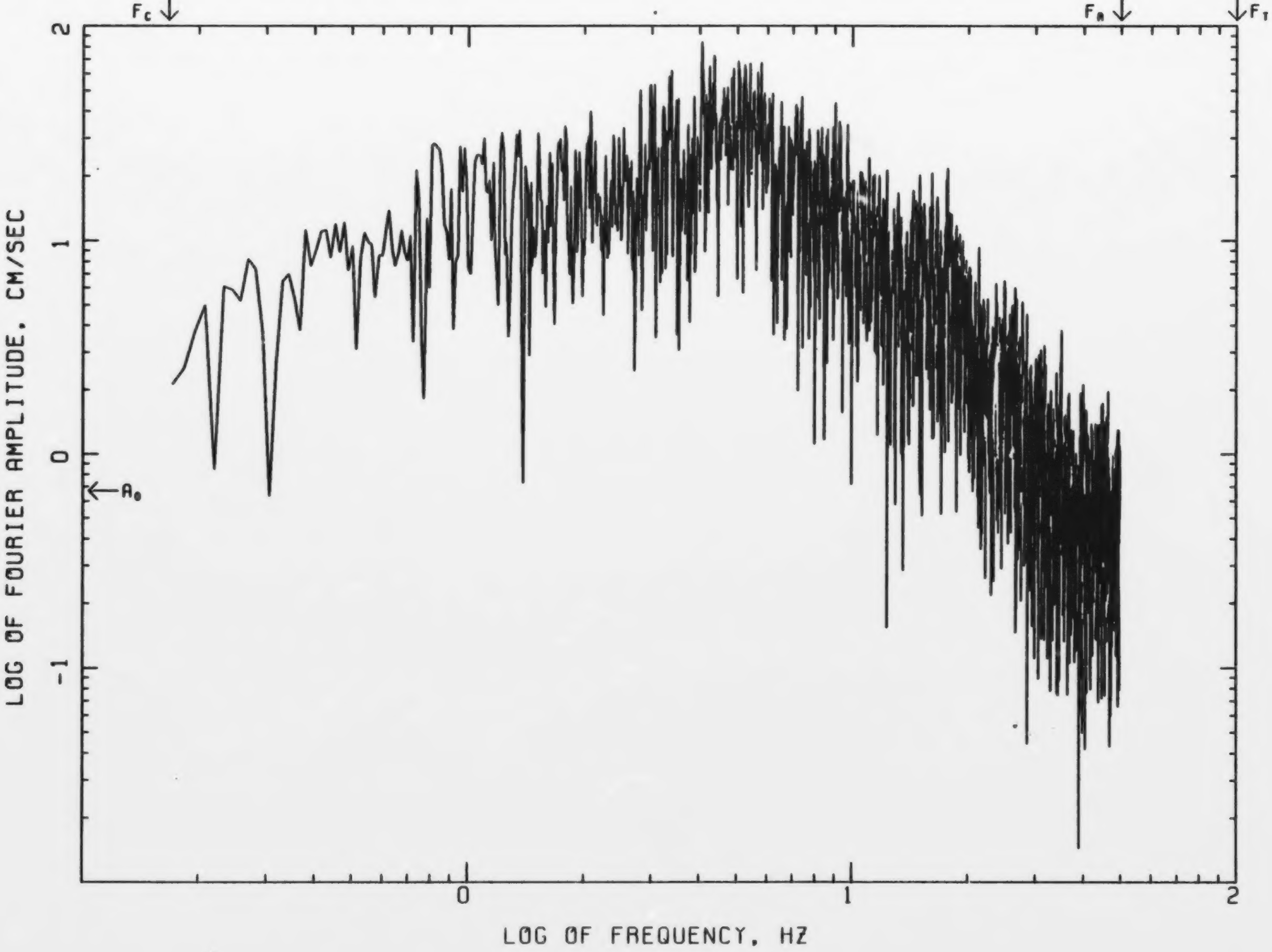
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
TALCA
010 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



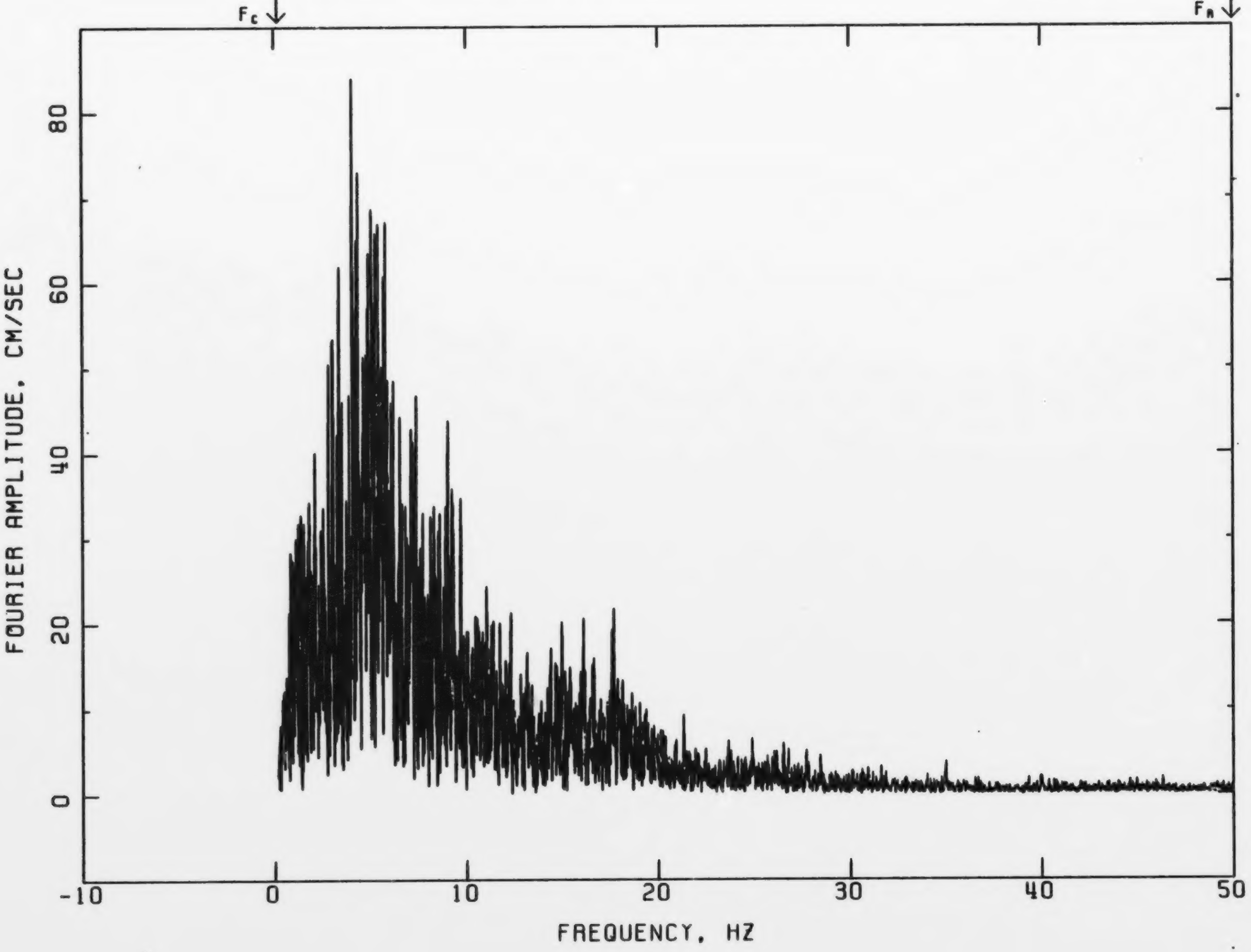
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
TALCA
010 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



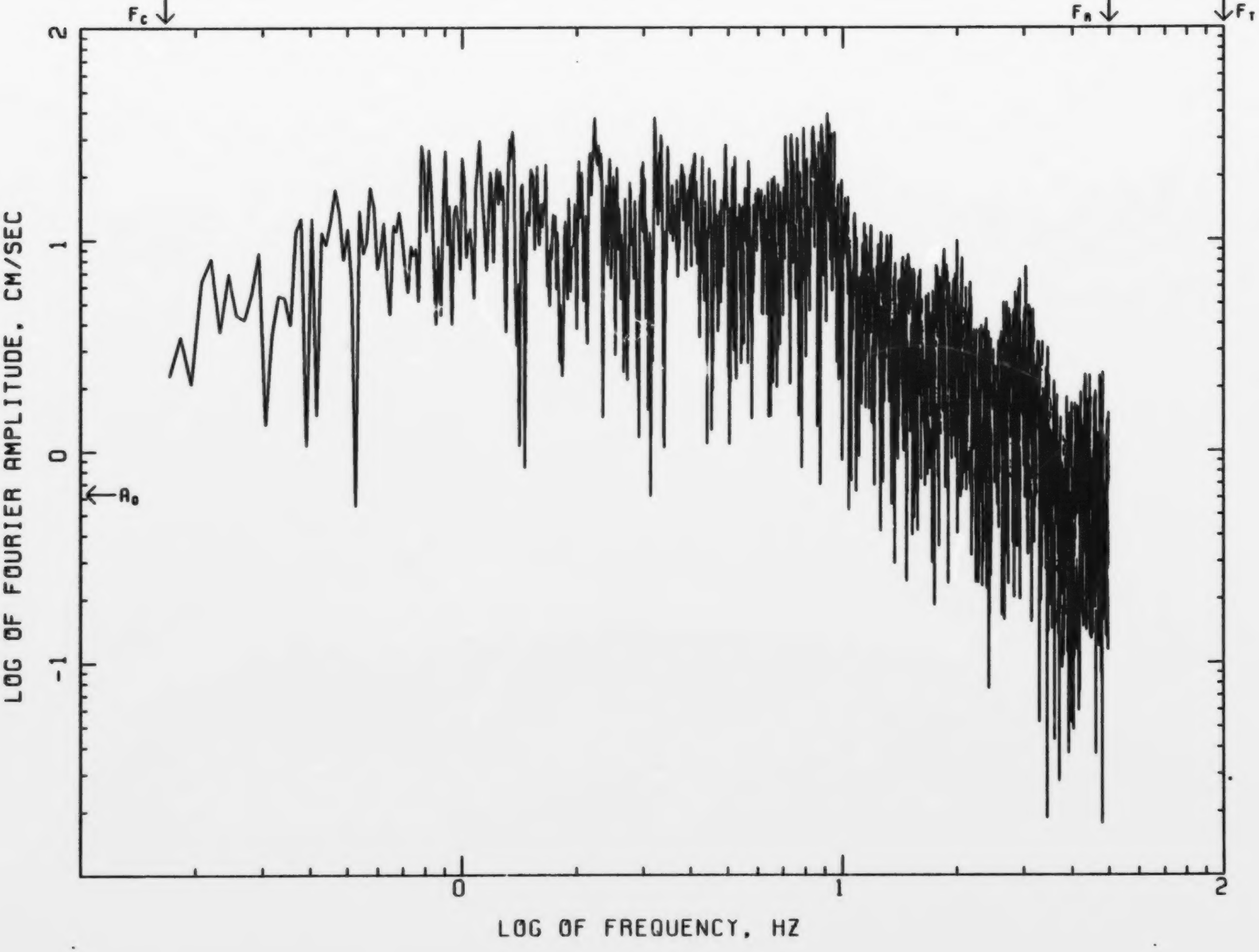
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
ILLAPEL
360 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



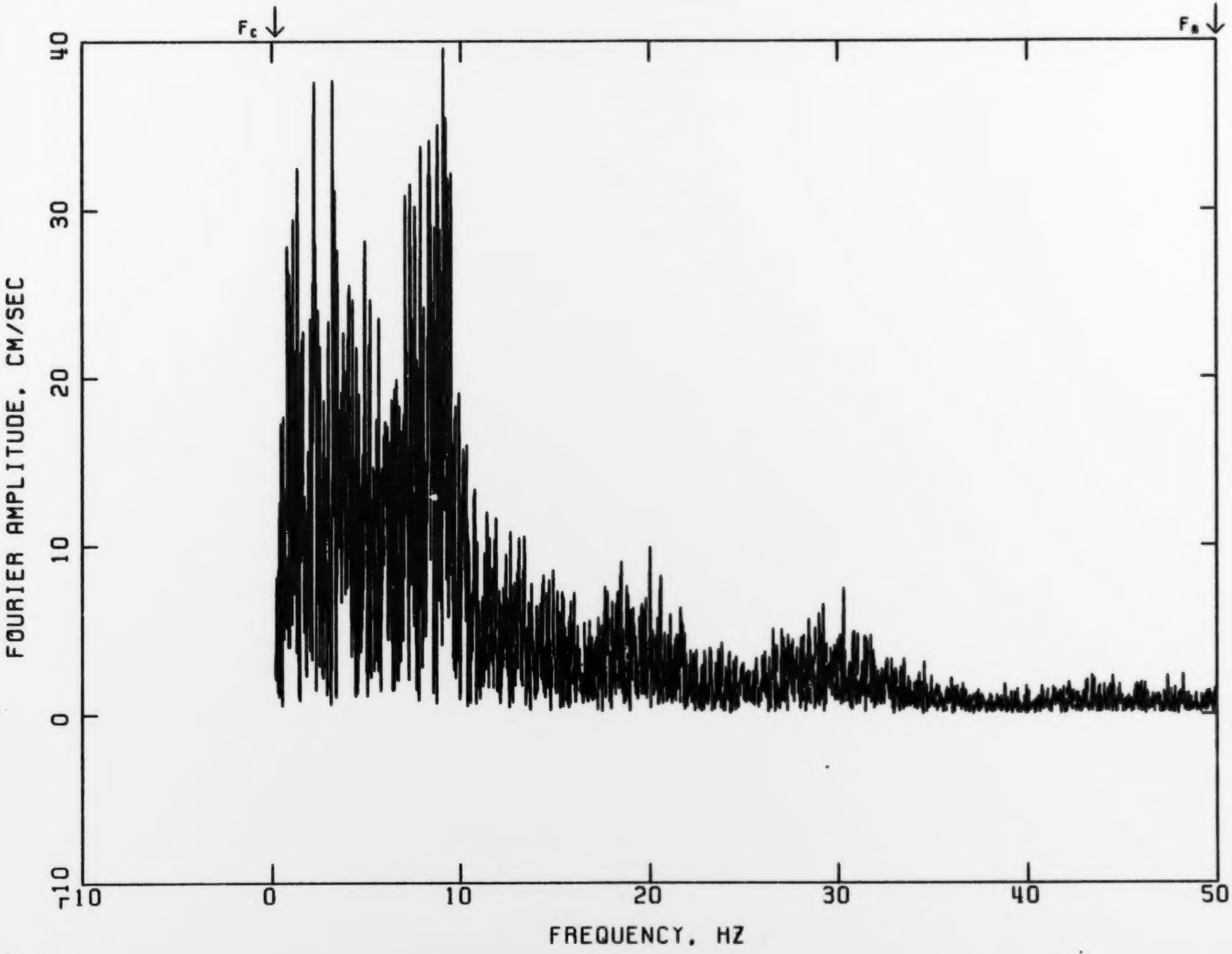
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
ILLAPEL
360 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE

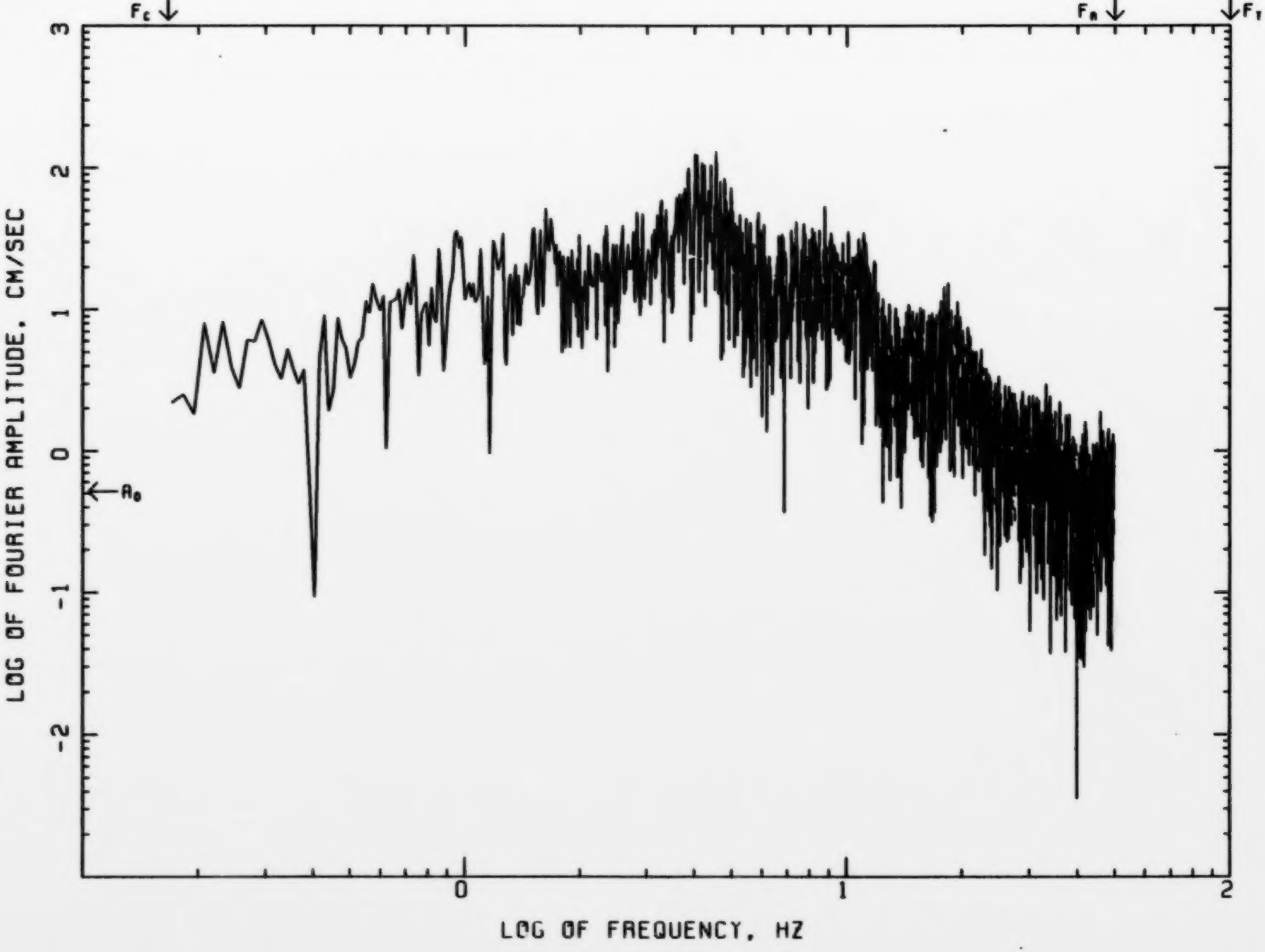


FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
ILLAPEL
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



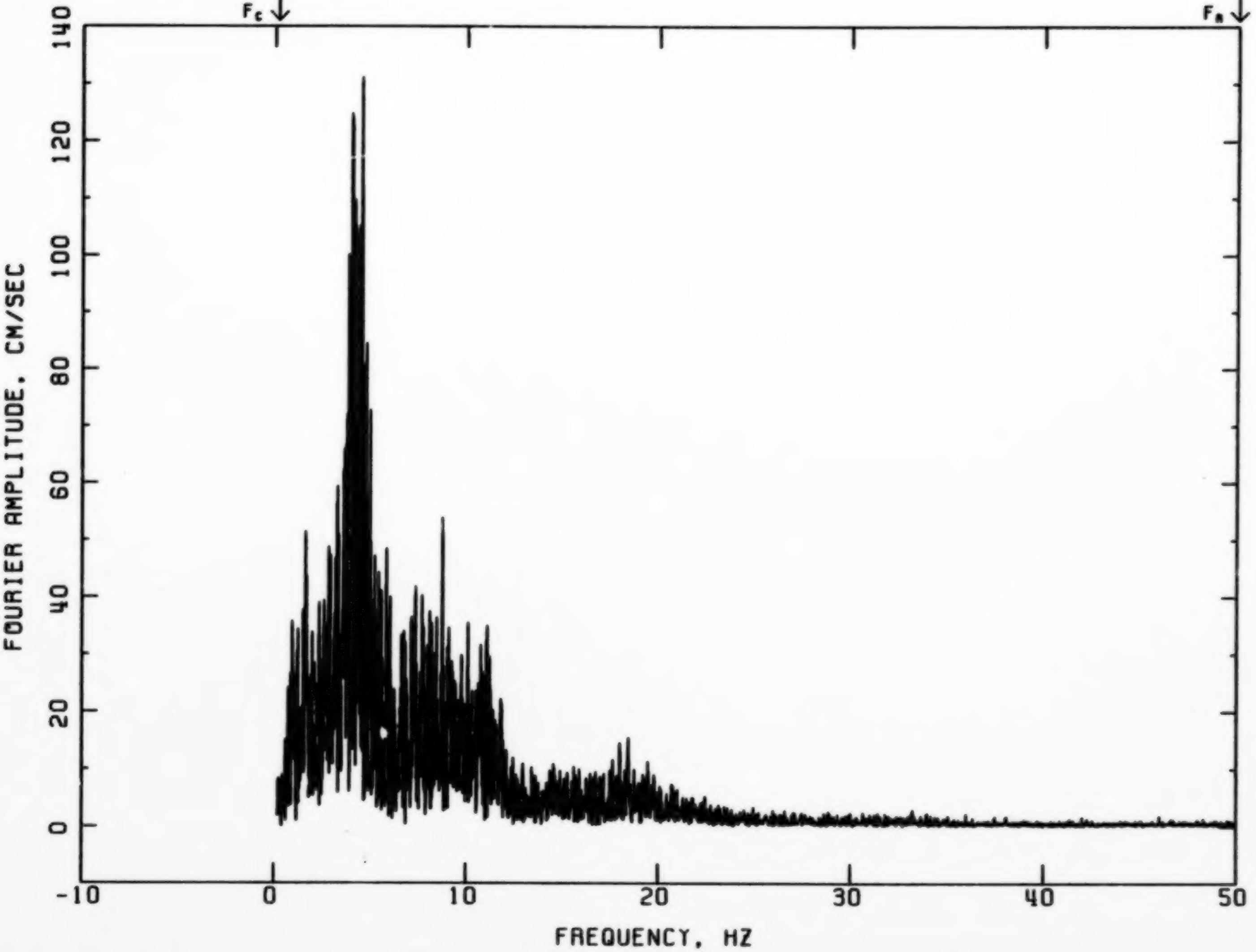
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
ILLAPEL
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



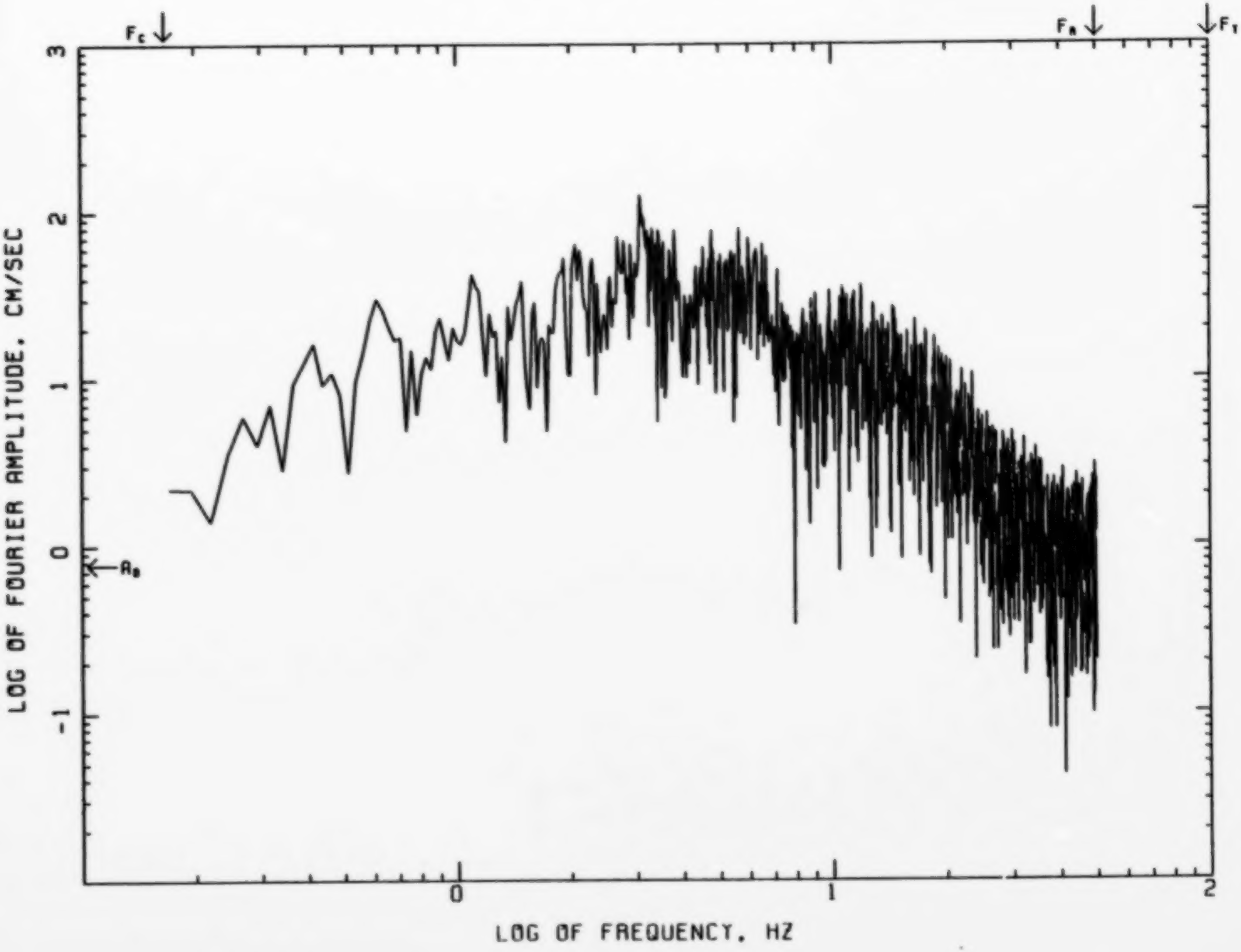


FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
ILLAPEL
90 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE

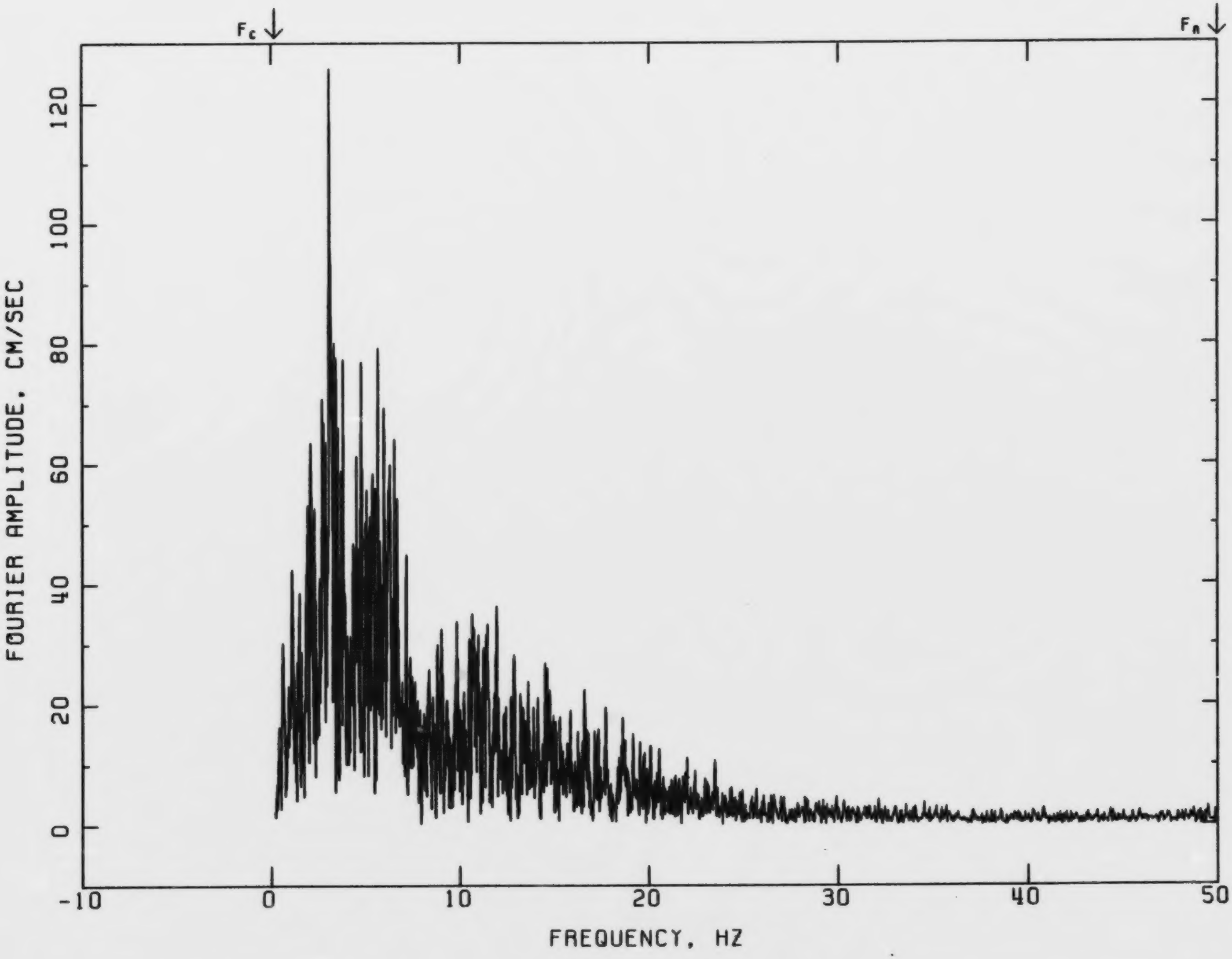
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
ILLAPEL
90 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



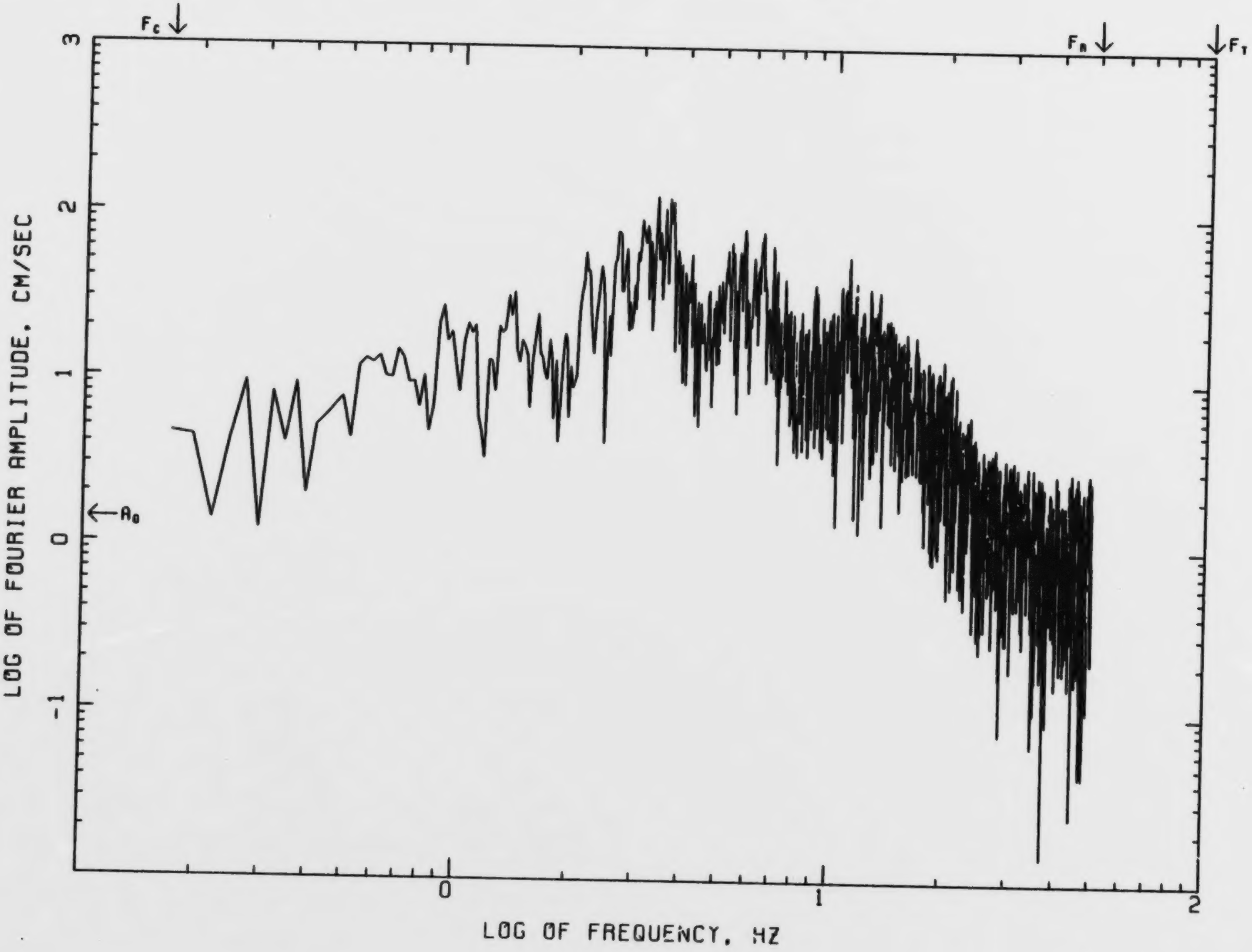
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LALIGUA
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



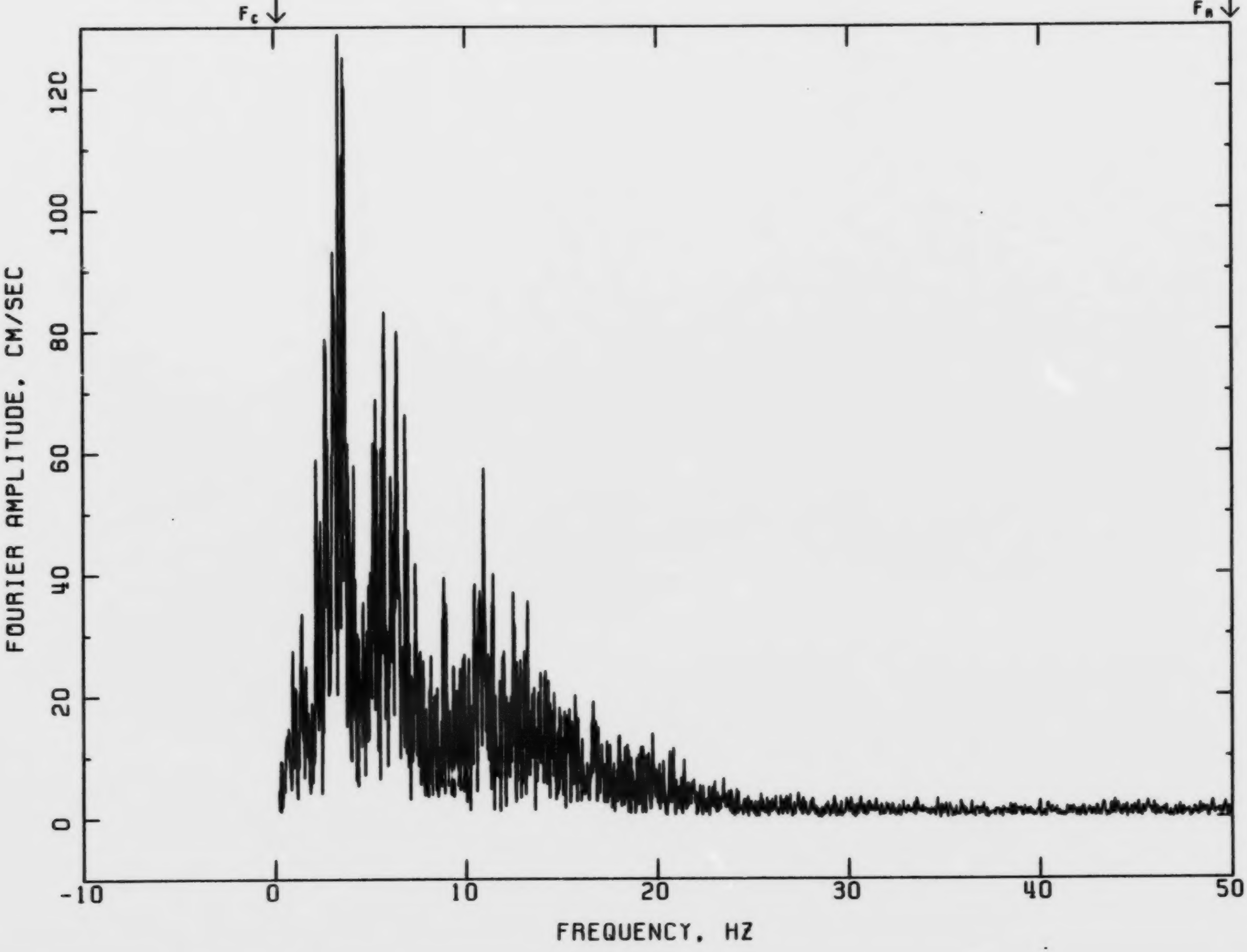
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LALIGUA
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



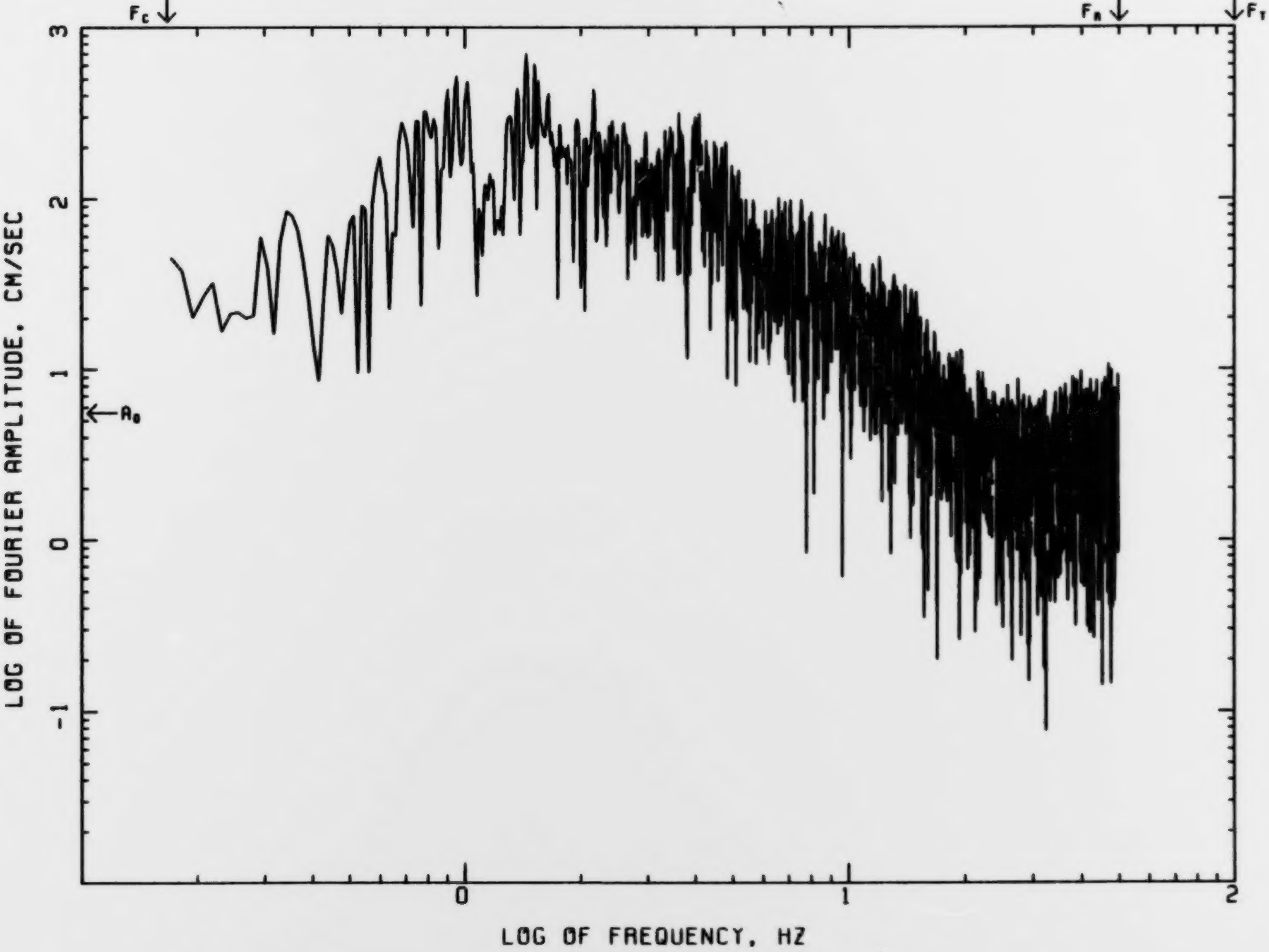
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LALIGUA
360 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



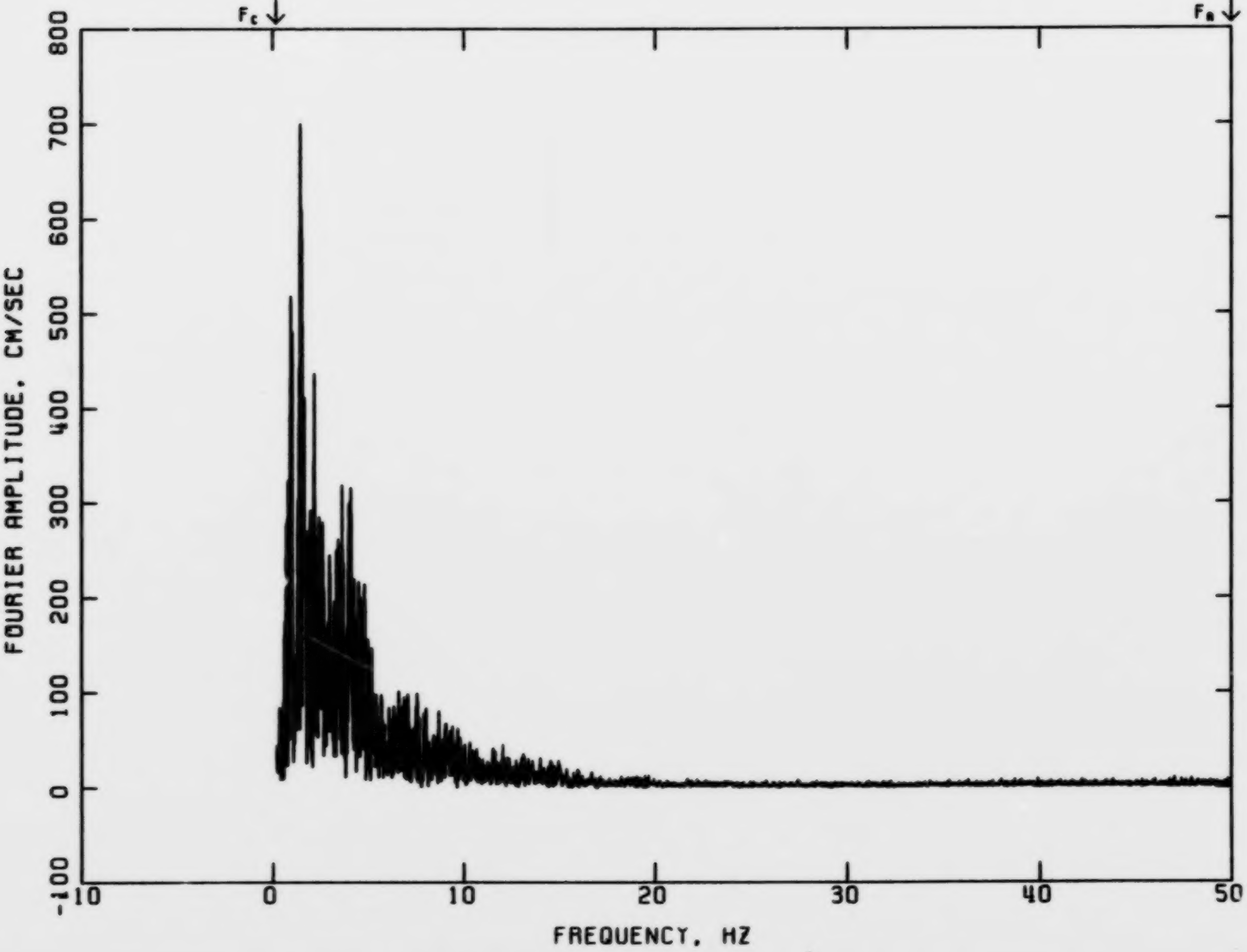
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LALIGUA
360 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



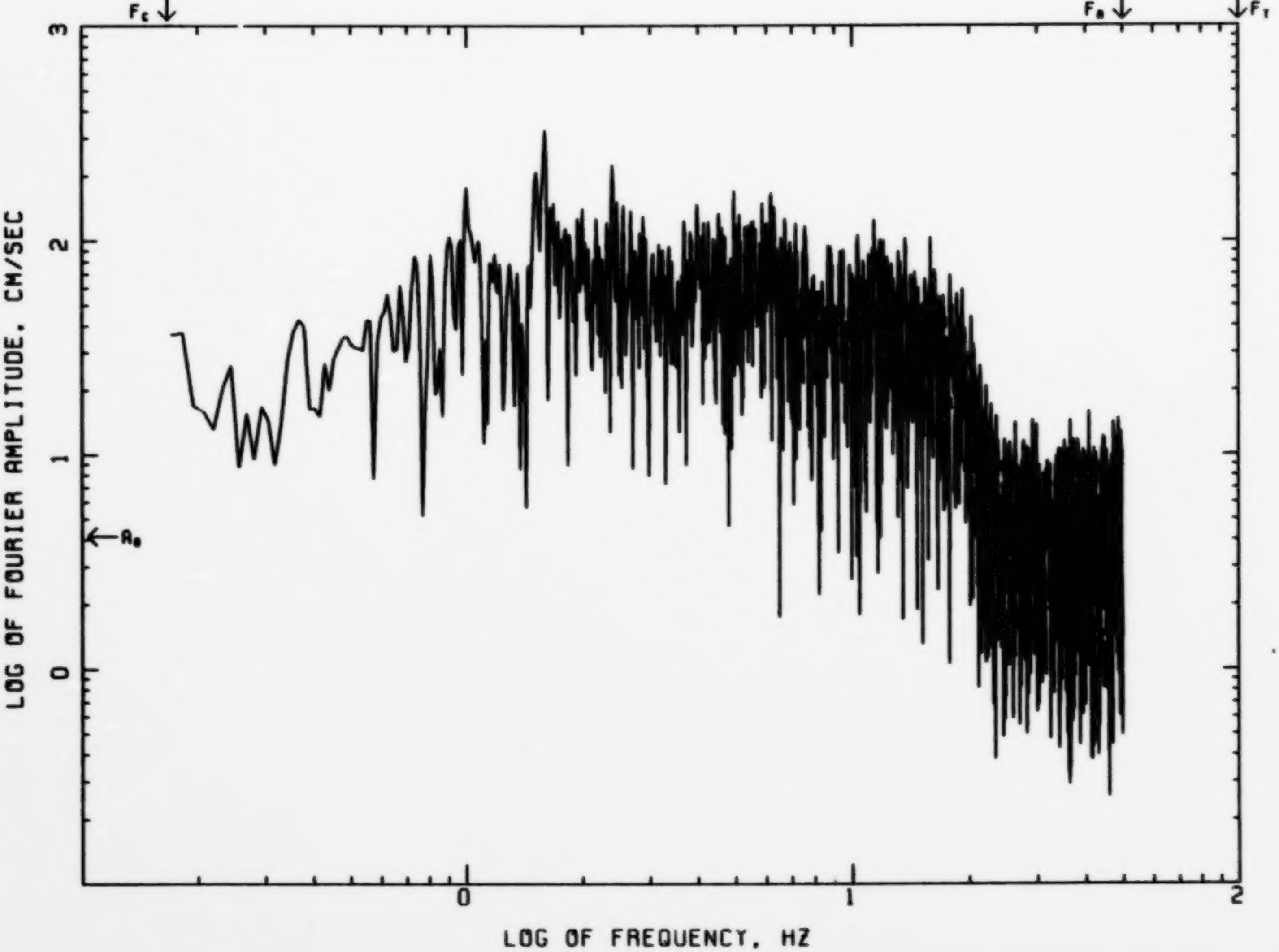
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLAYLLAY
360 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



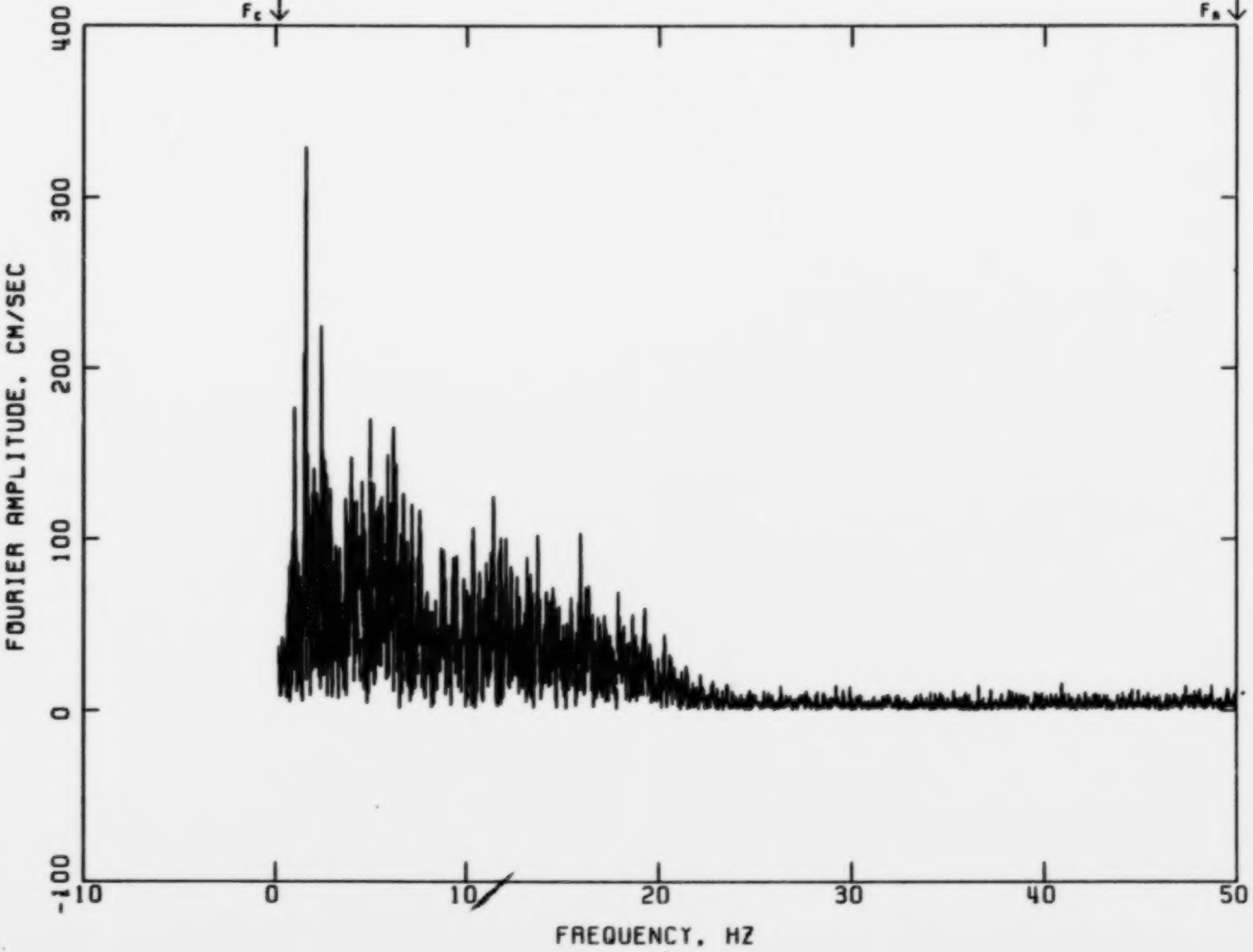
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLAYLLAY
360 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



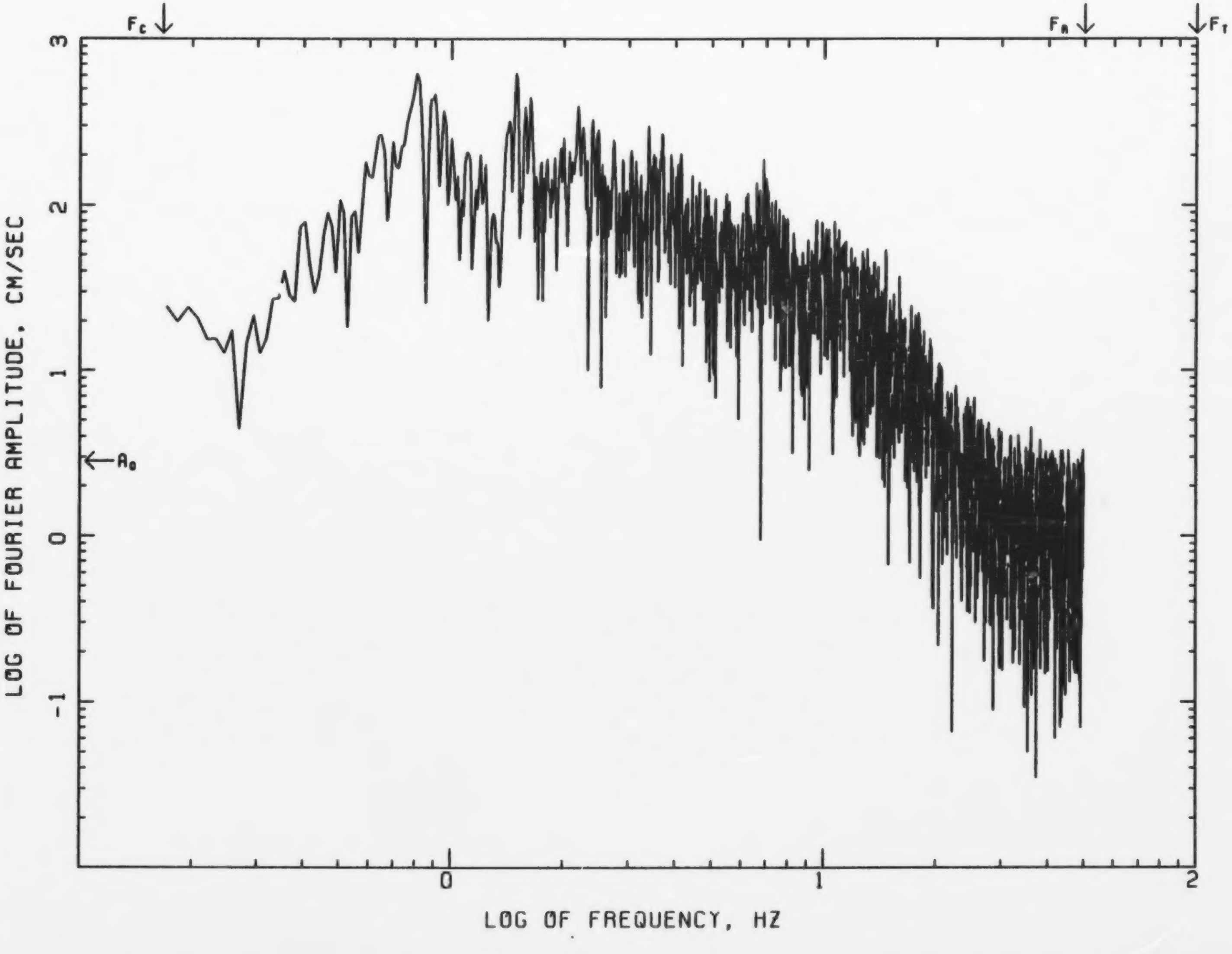
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLAYLLAY
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



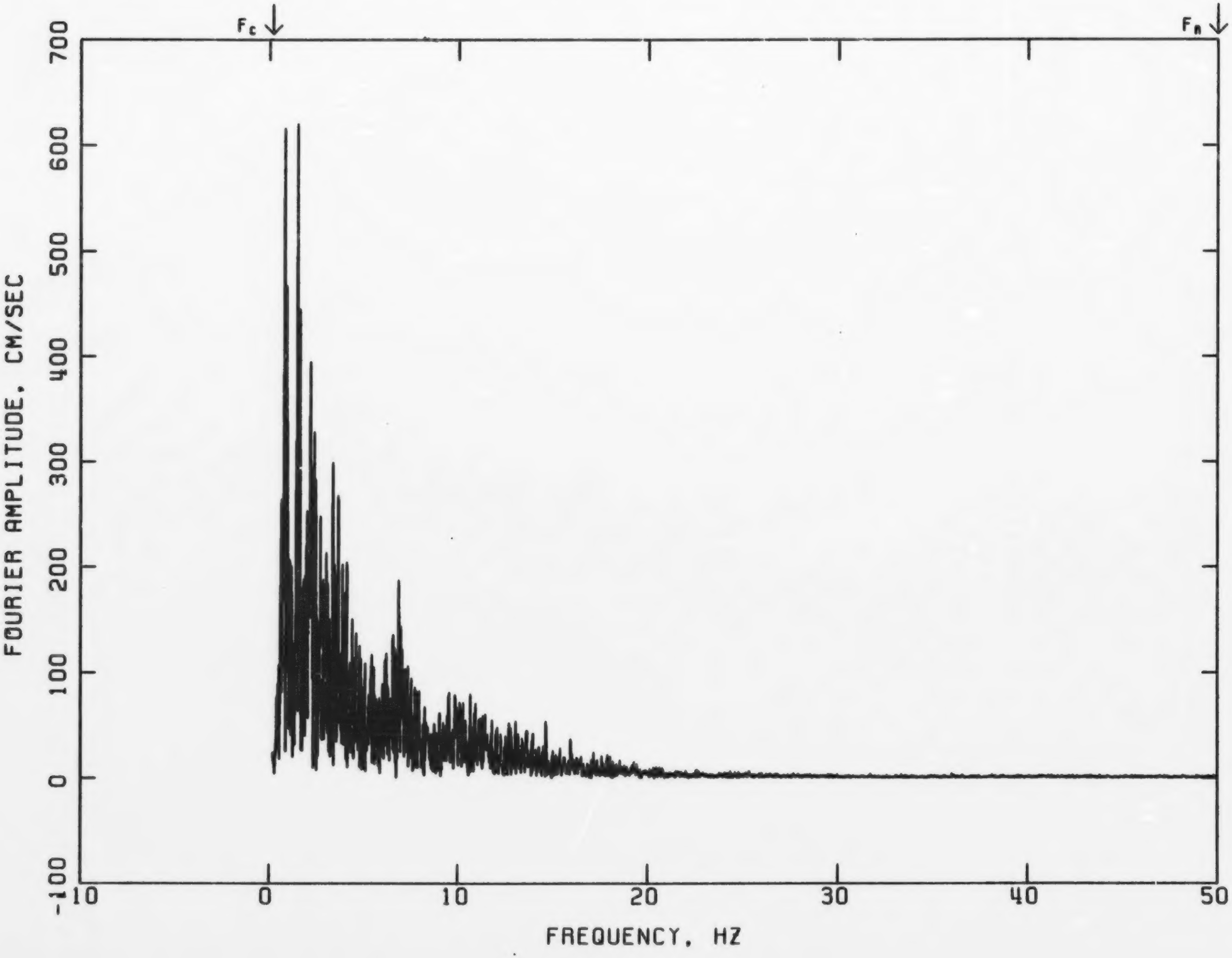
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLAYLLAY
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



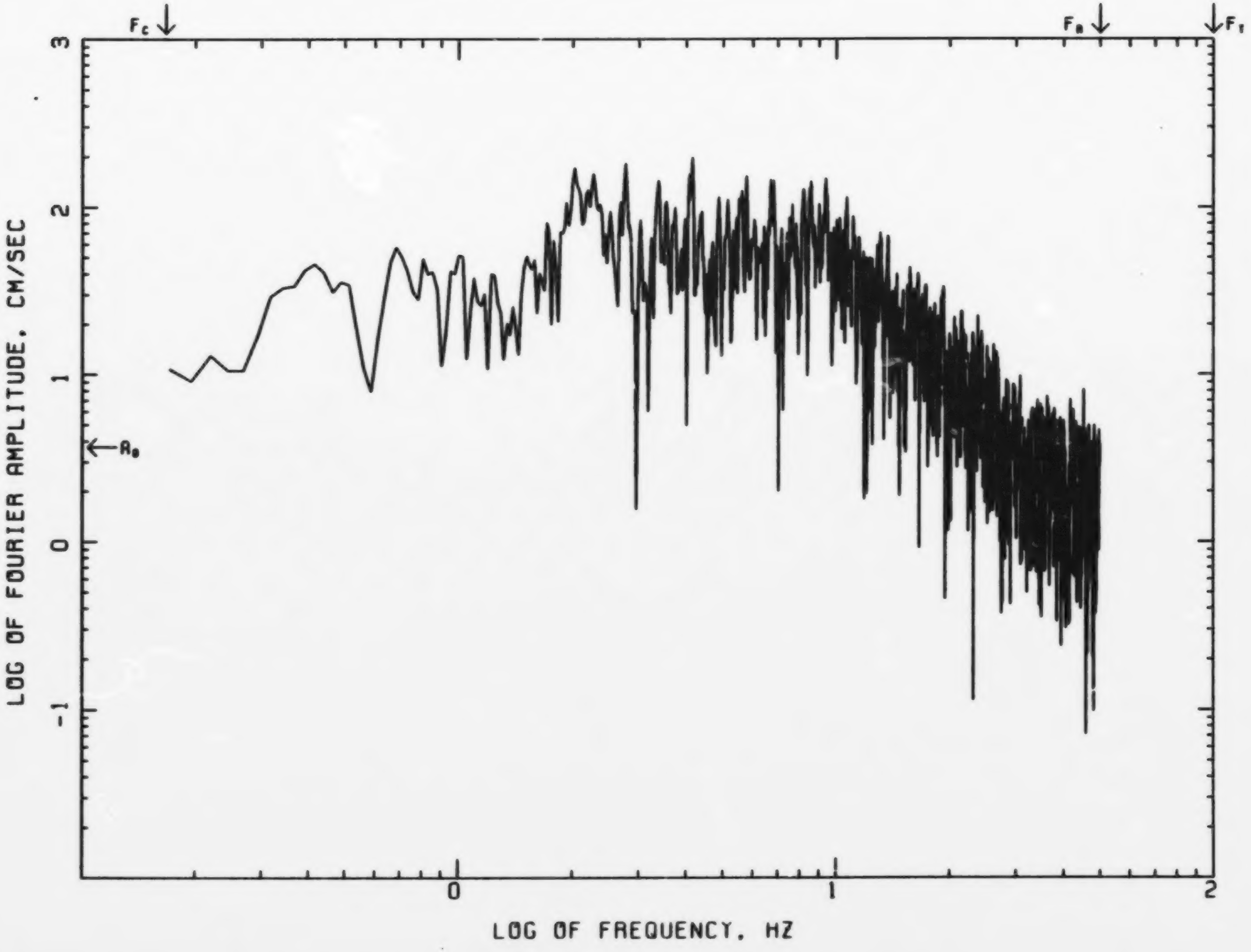
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLAYLLAY
90 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



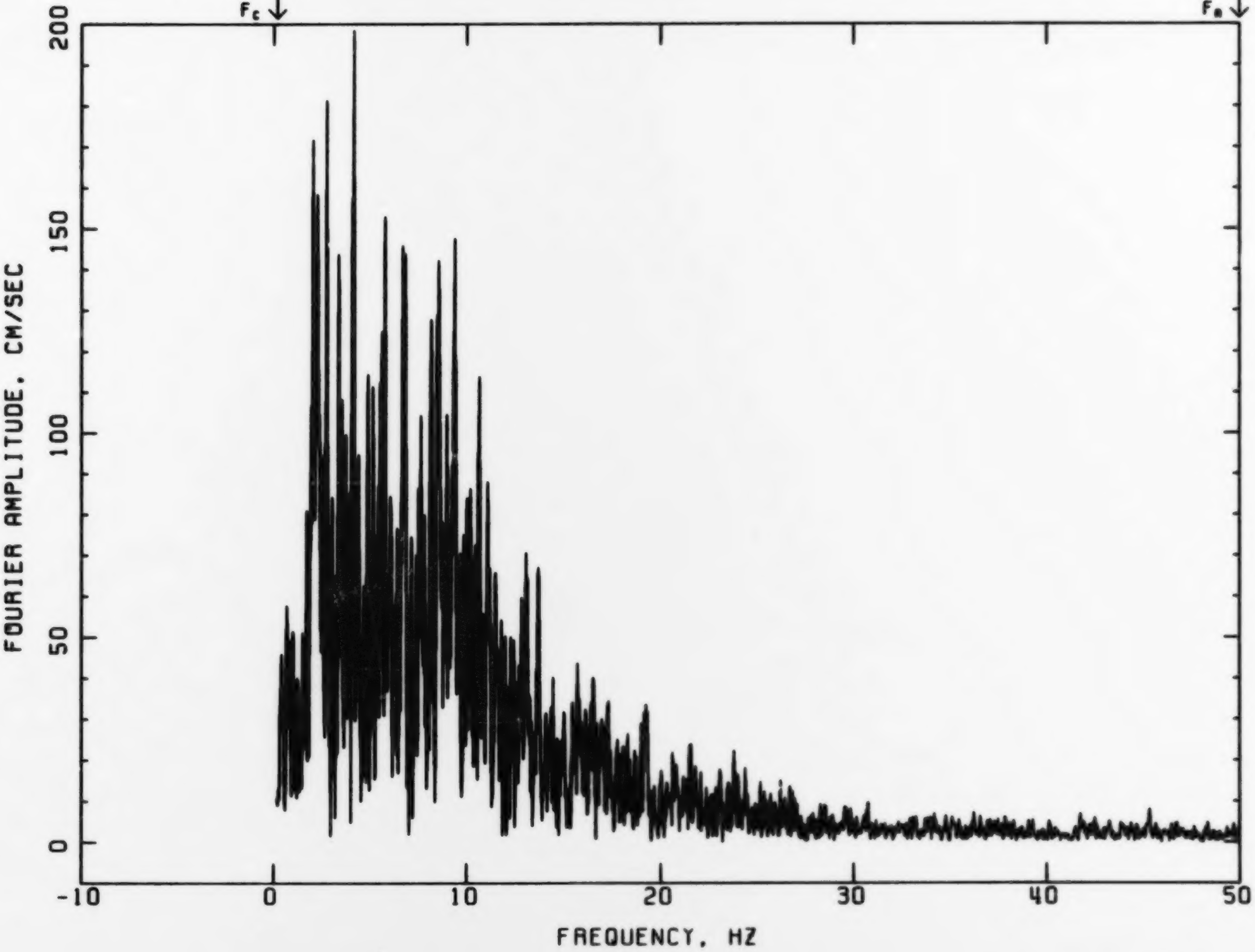
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLAYLLAY
90 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE

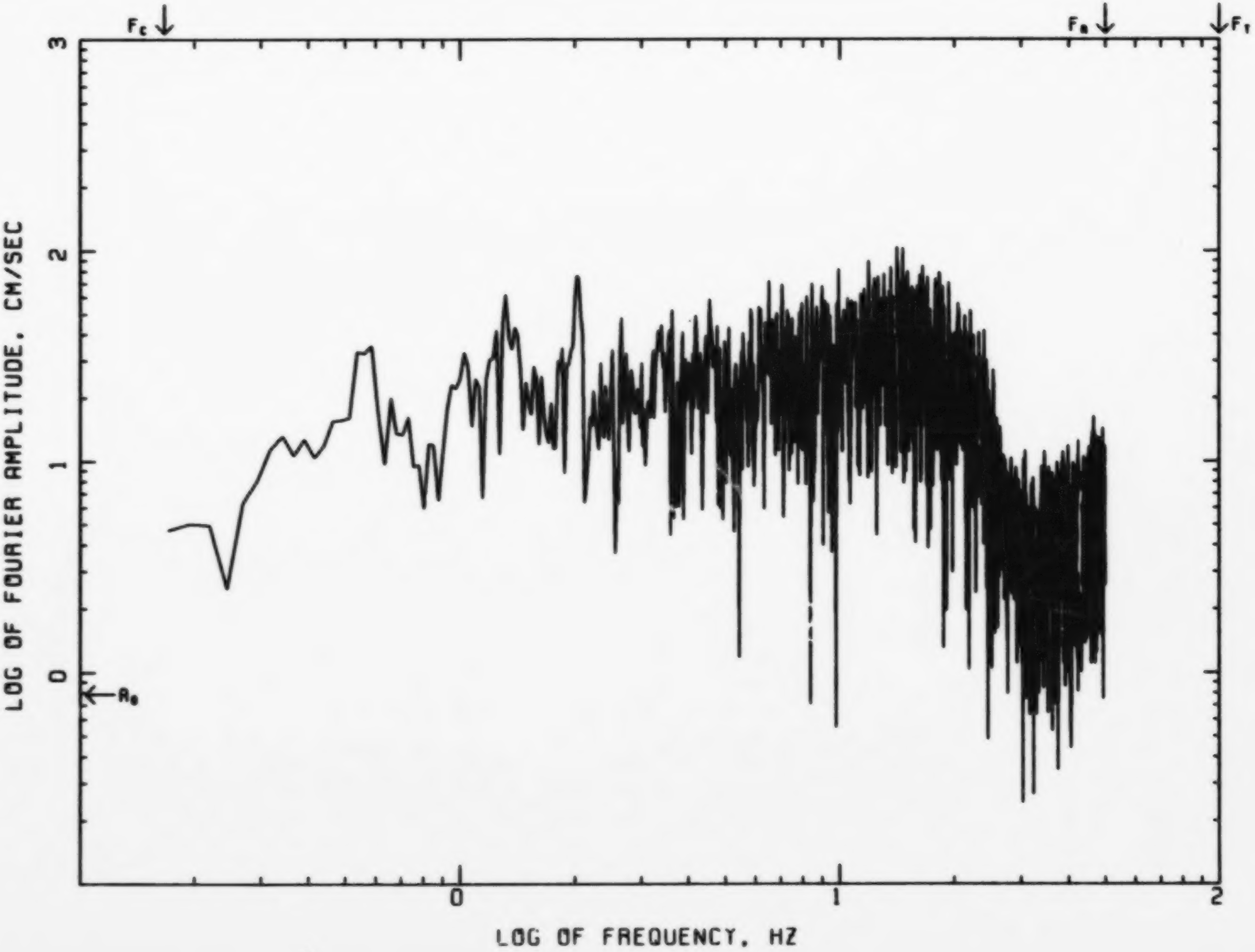


FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SAN FELIPE
360 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE

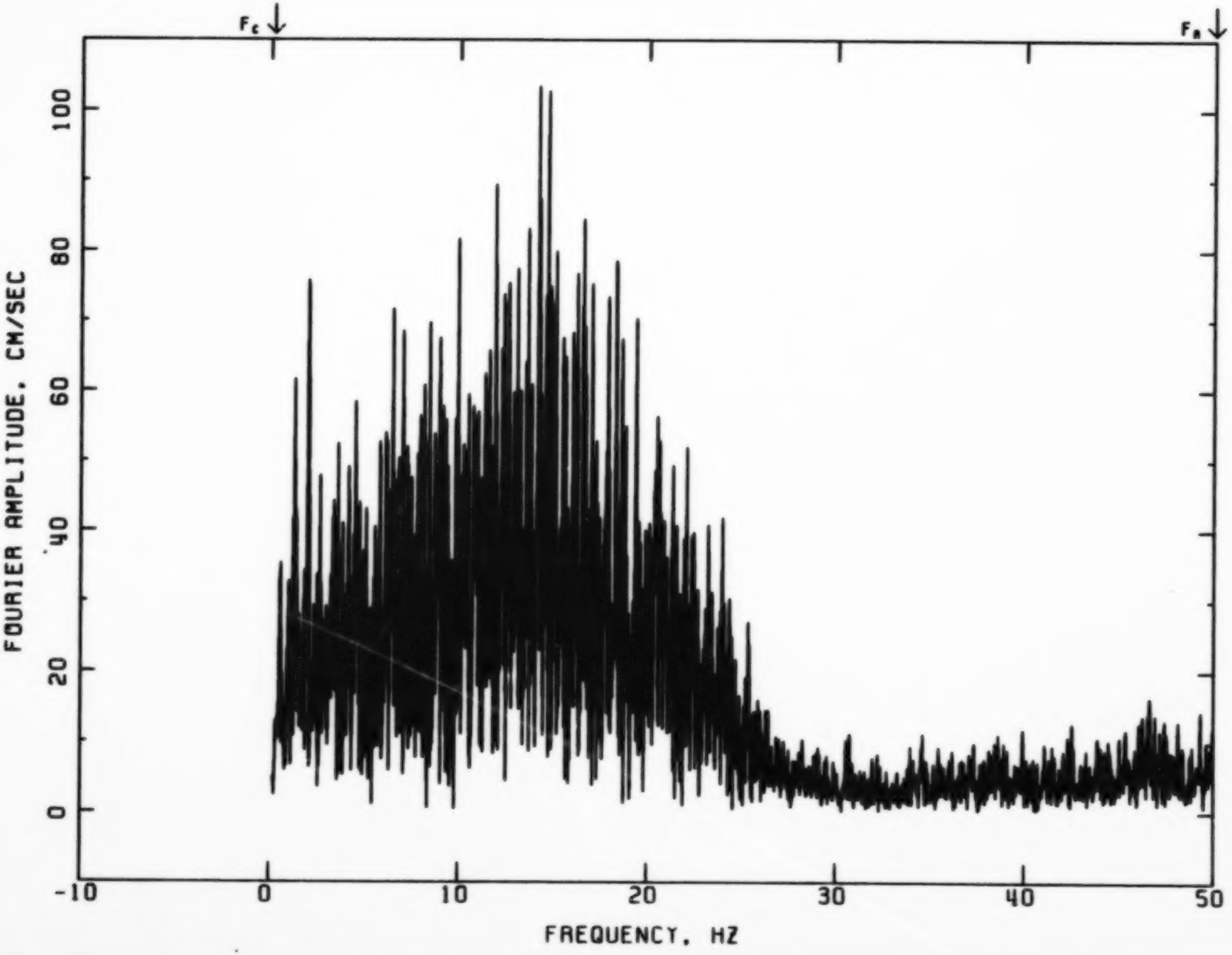


FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SAN FELIPE
360 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE

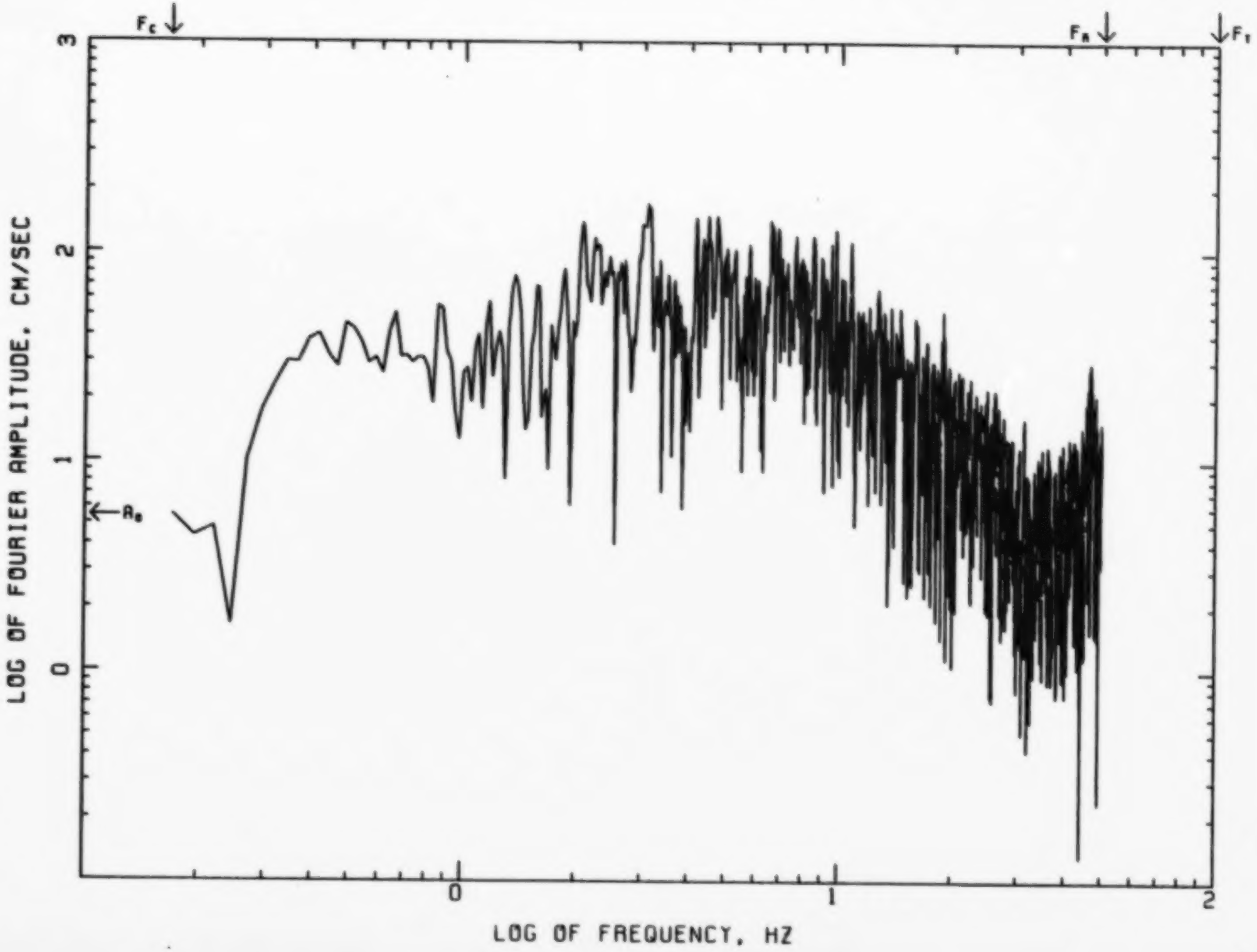


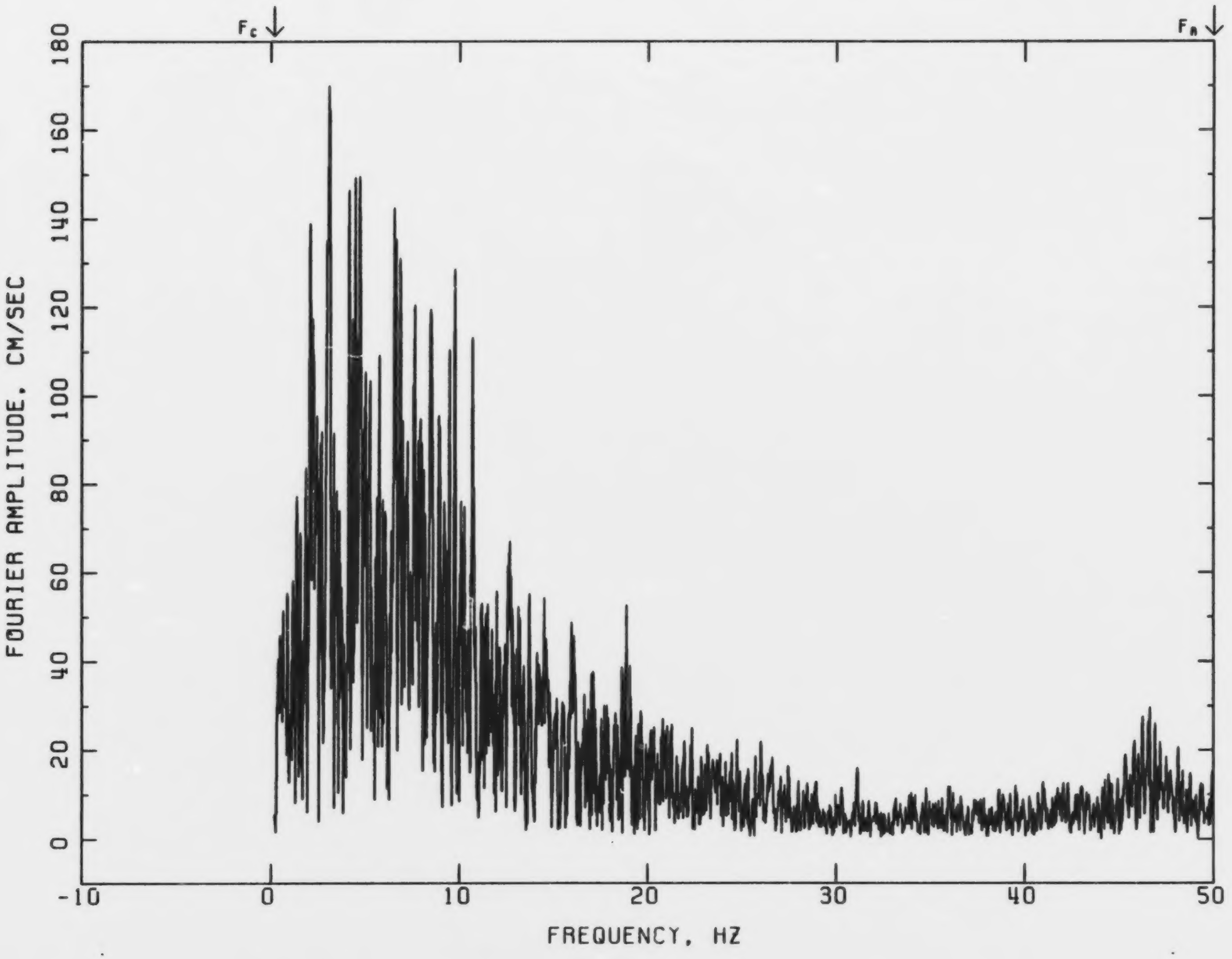

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SAN FELIPE
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SAN FELIPE
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



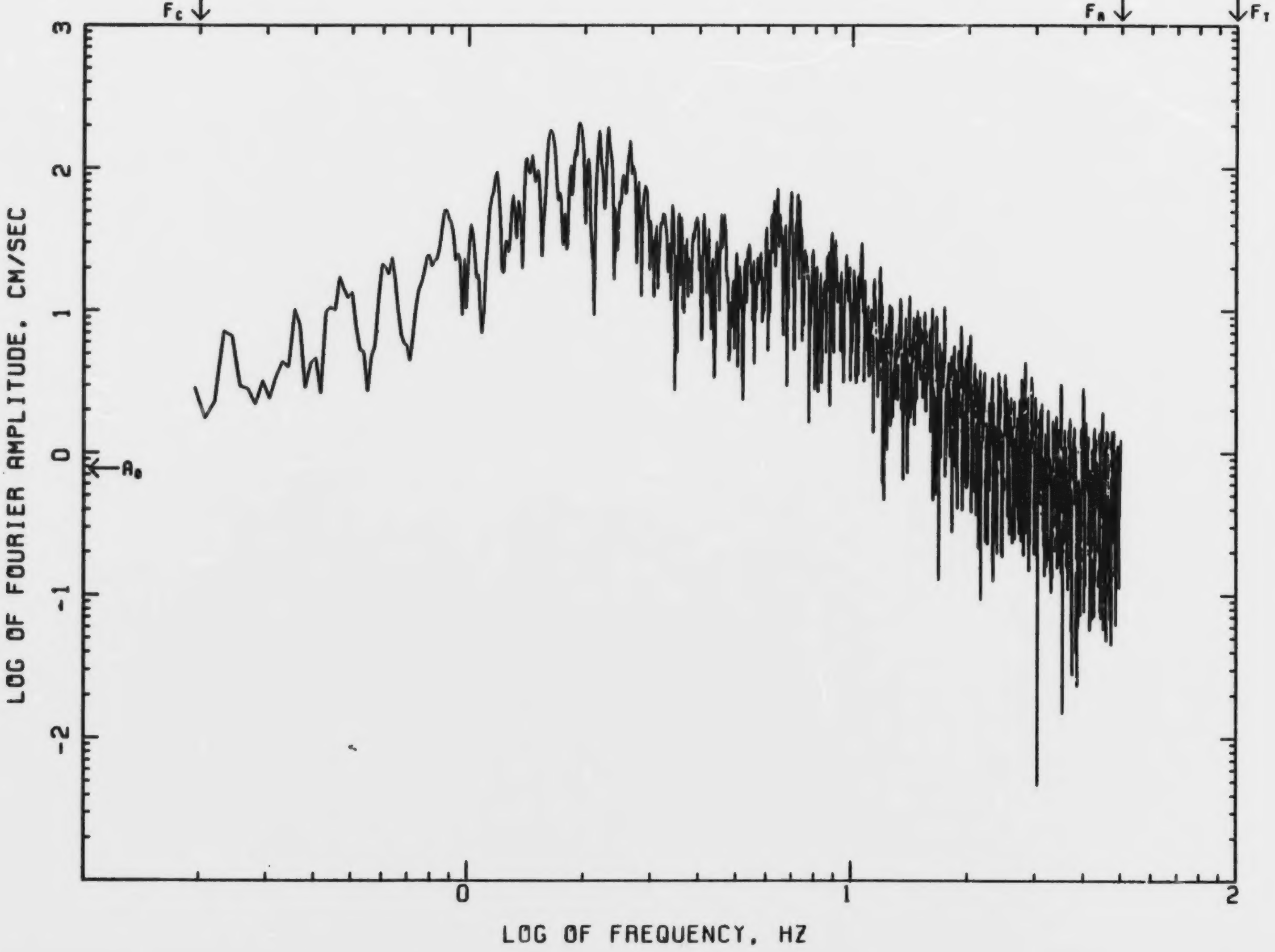
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SAN FELIPE
90 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE

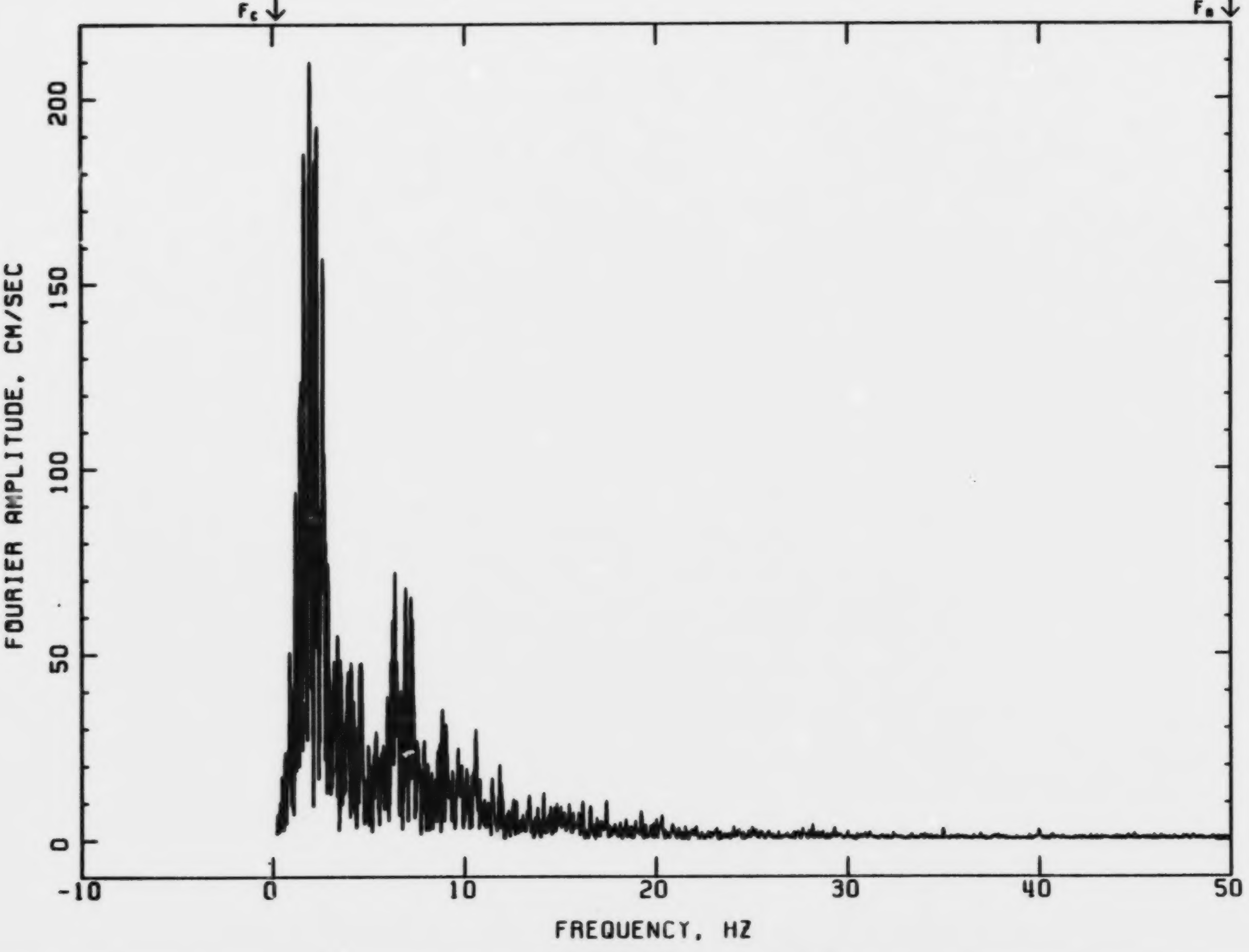




FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SAN FELIPE
90 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH FILTER AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE

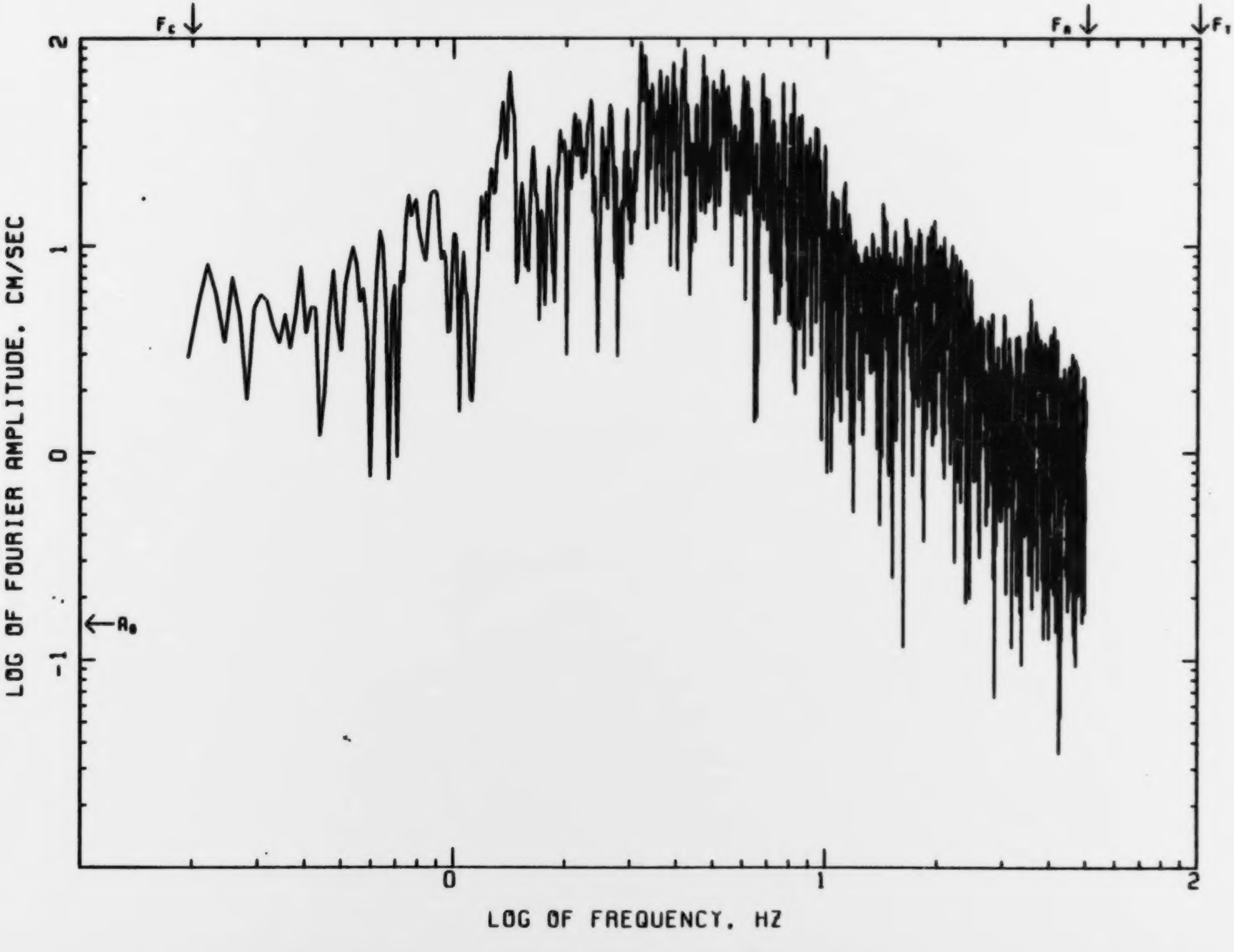
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO
100 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



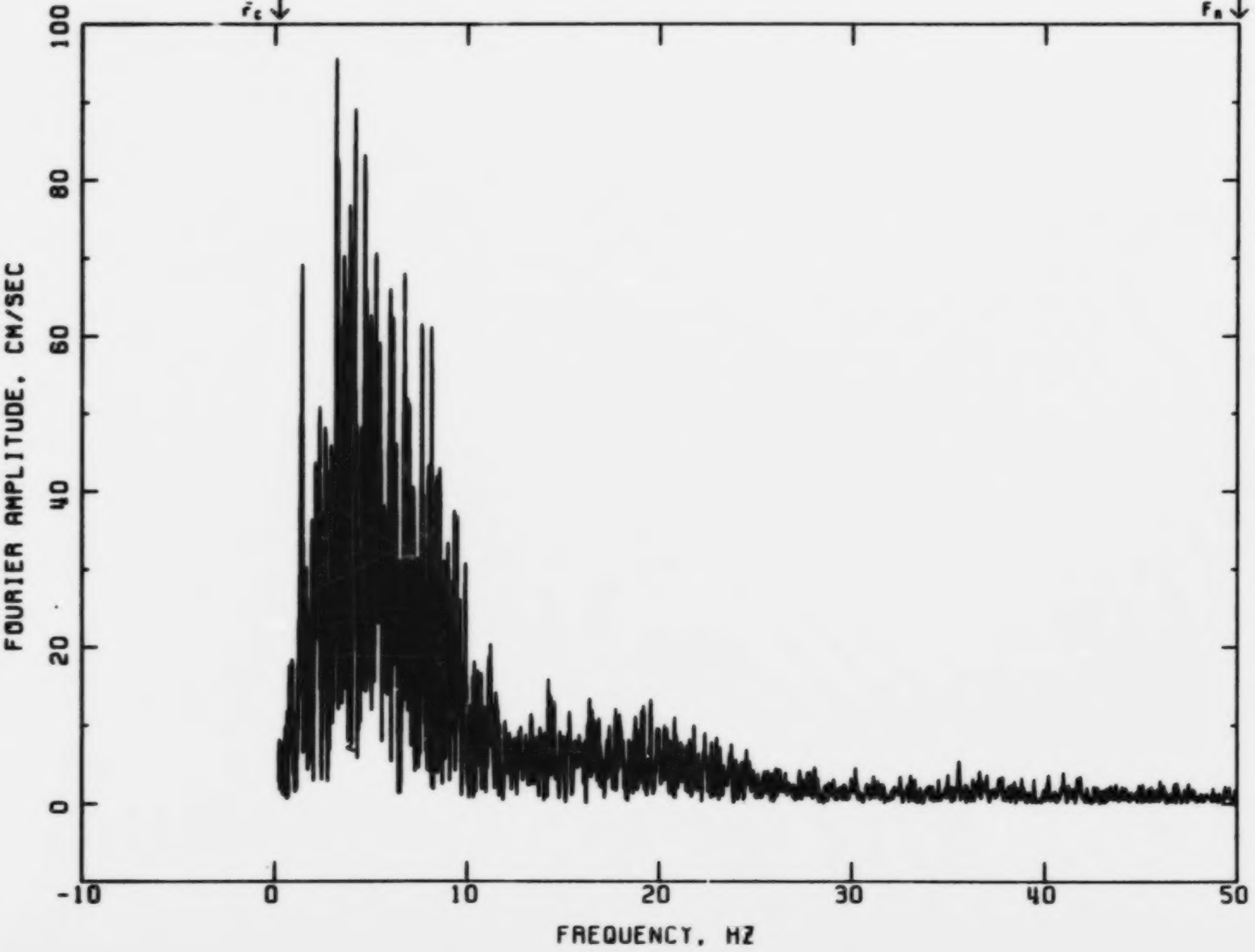


FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO
100 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE

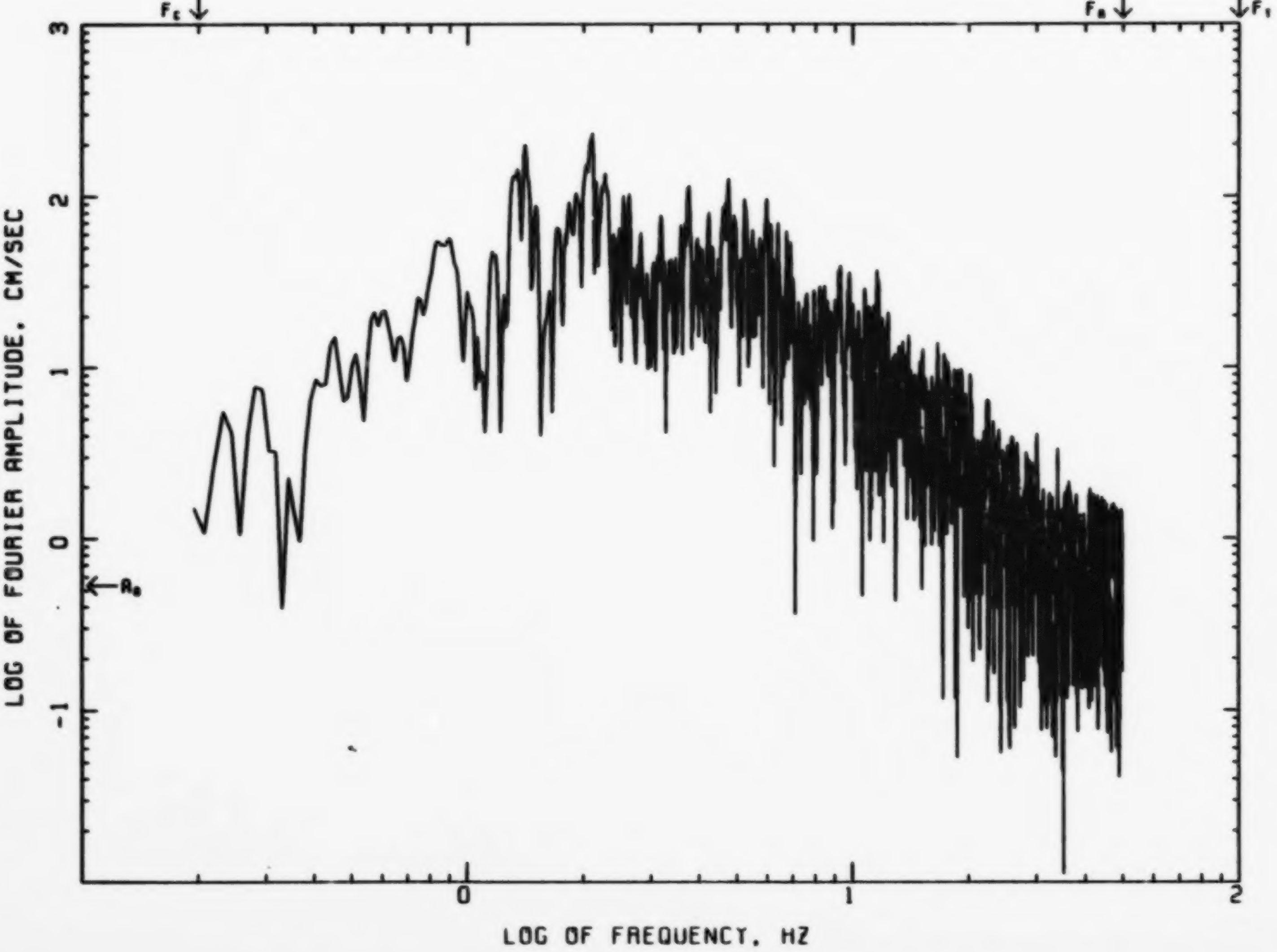
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO
UP
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE

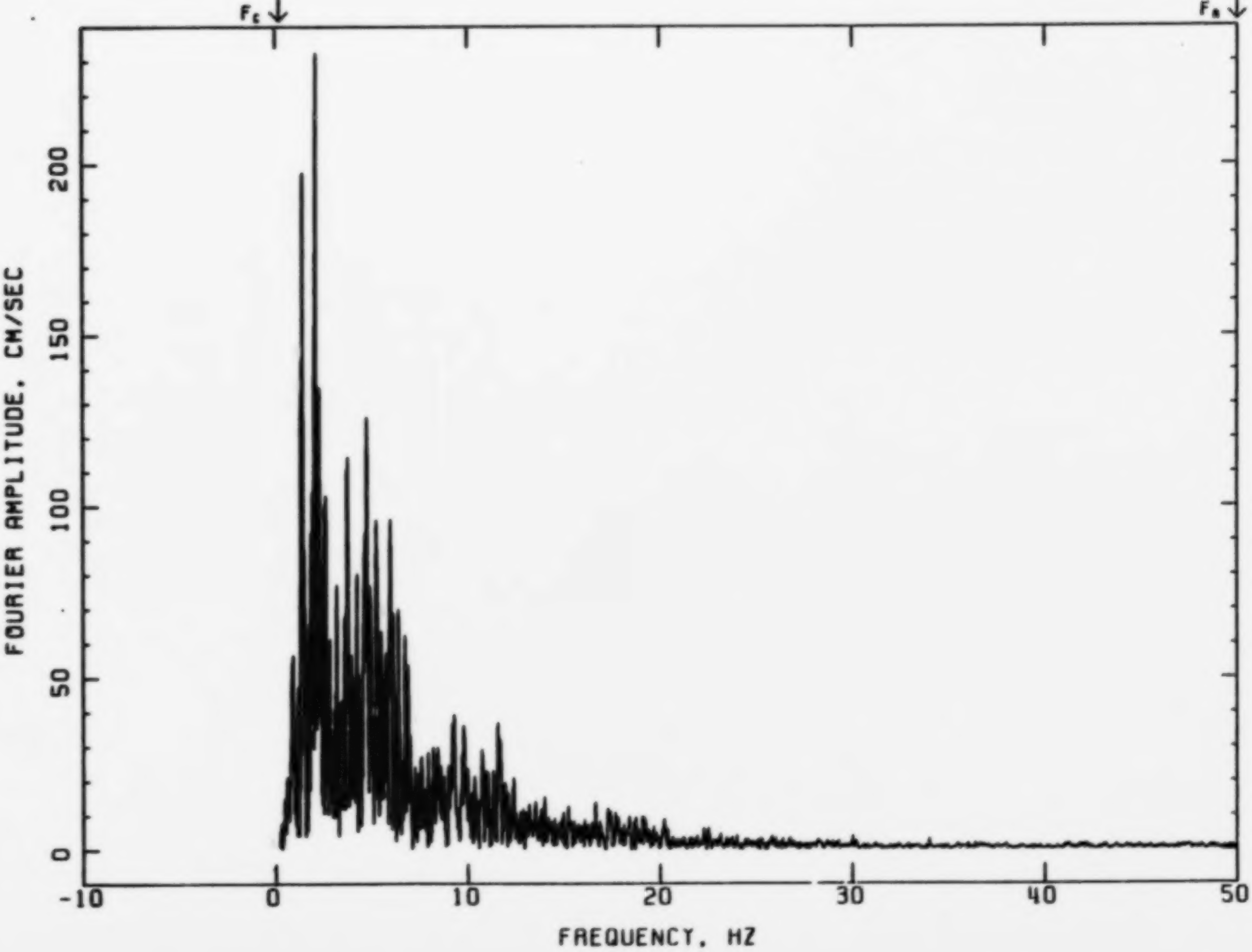


FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO
UP
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



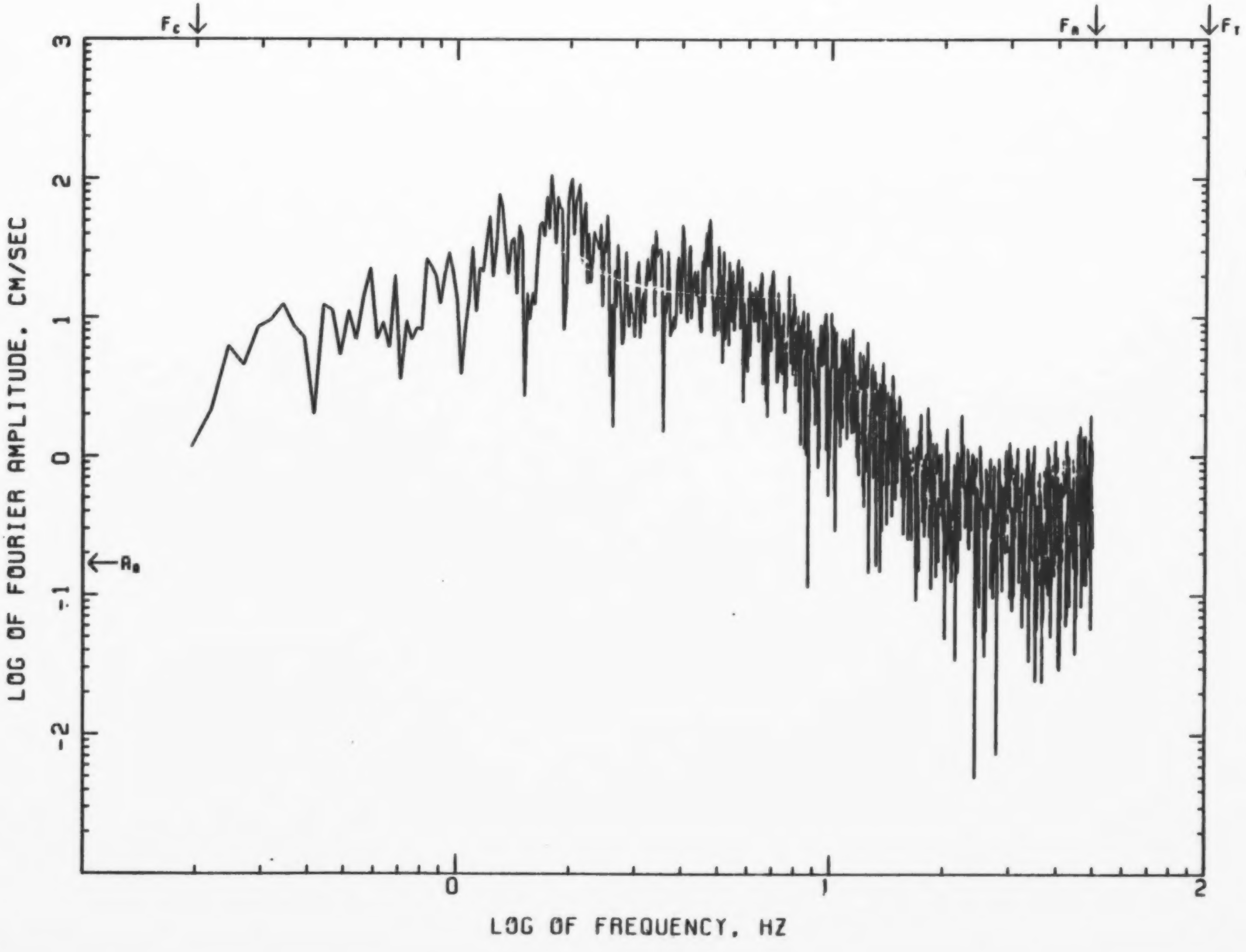
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO
10 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



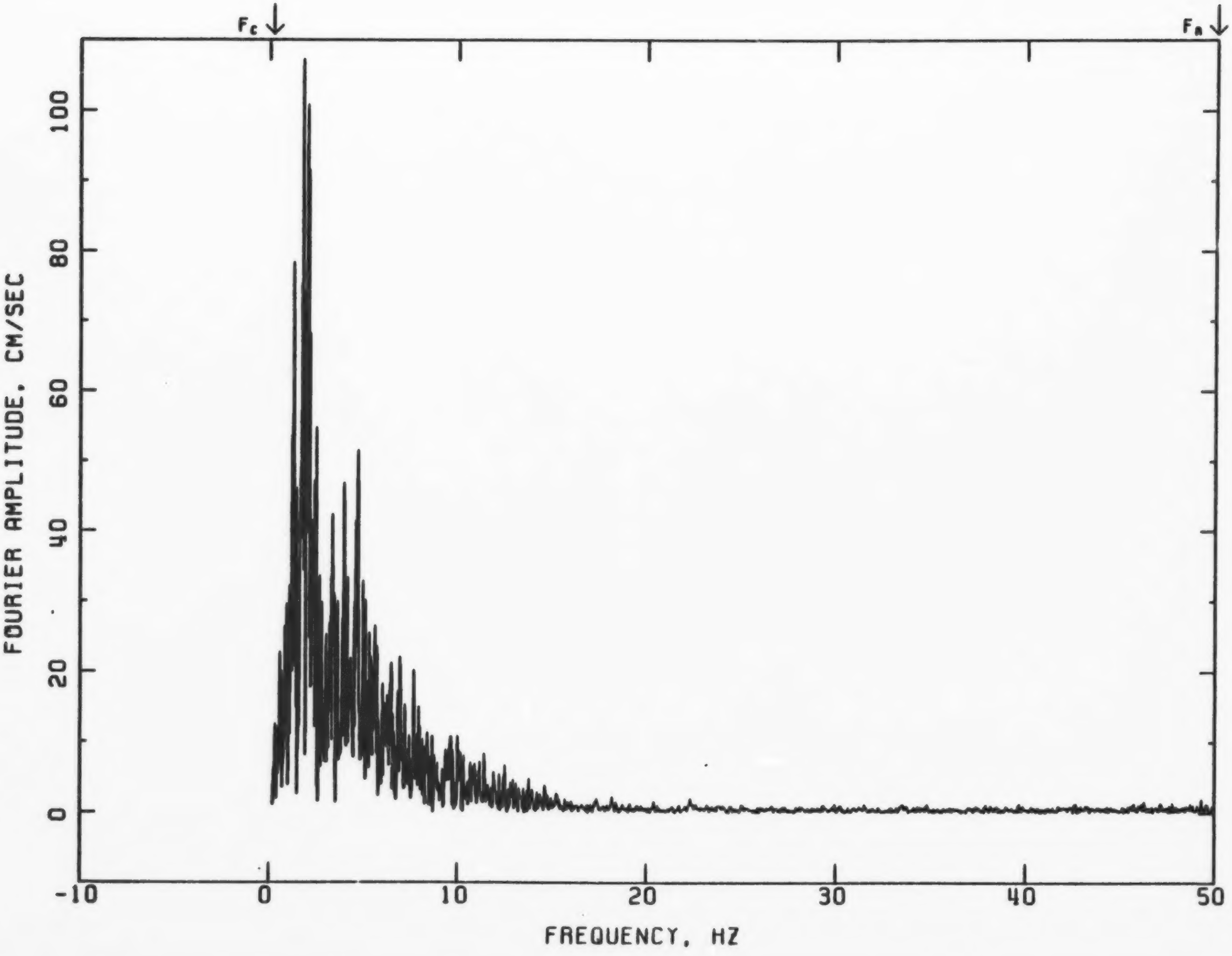


FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO
10 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE

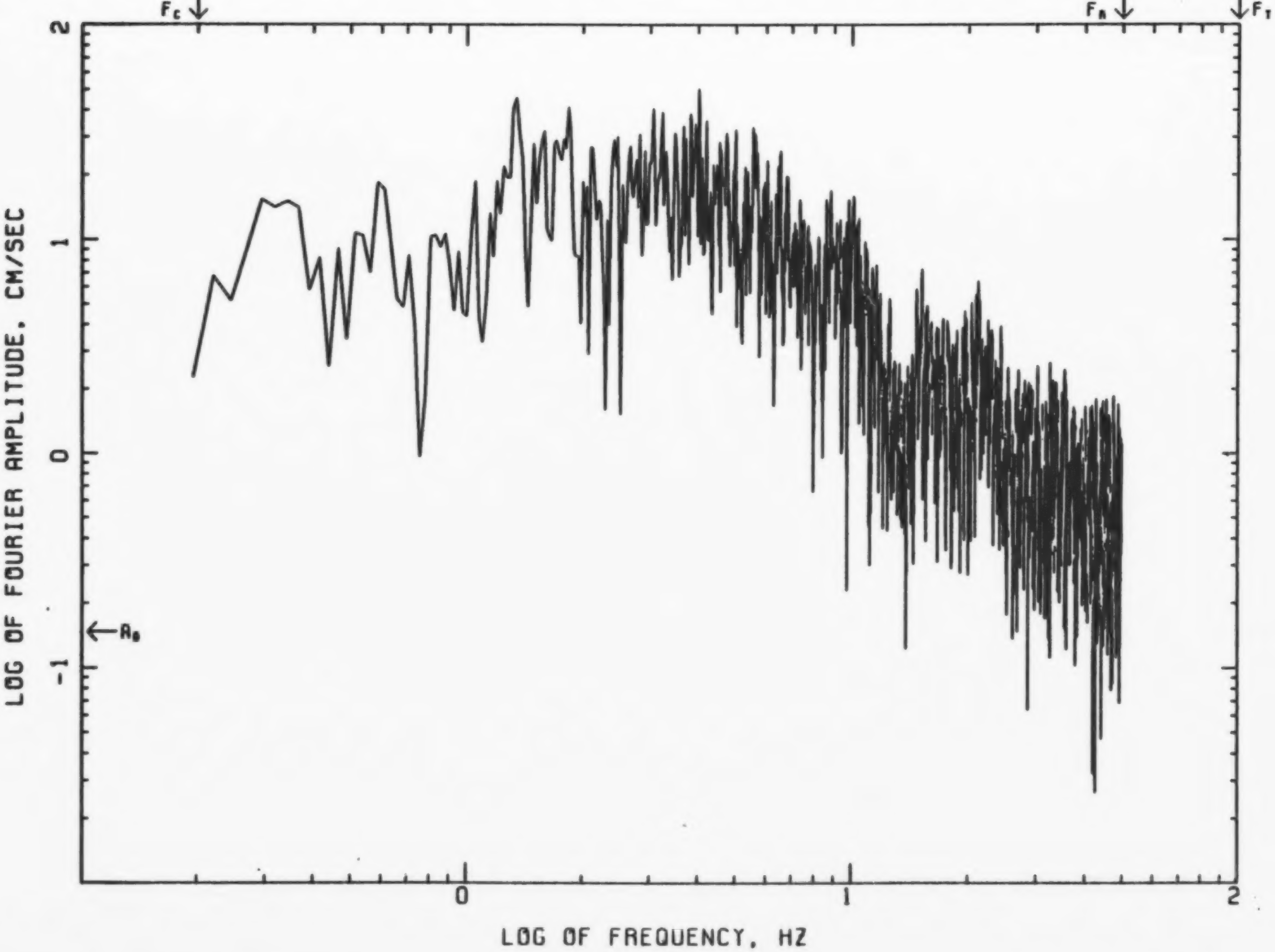
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VINA DEL MAR
290 DEGREES
EARTHQUAKE OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



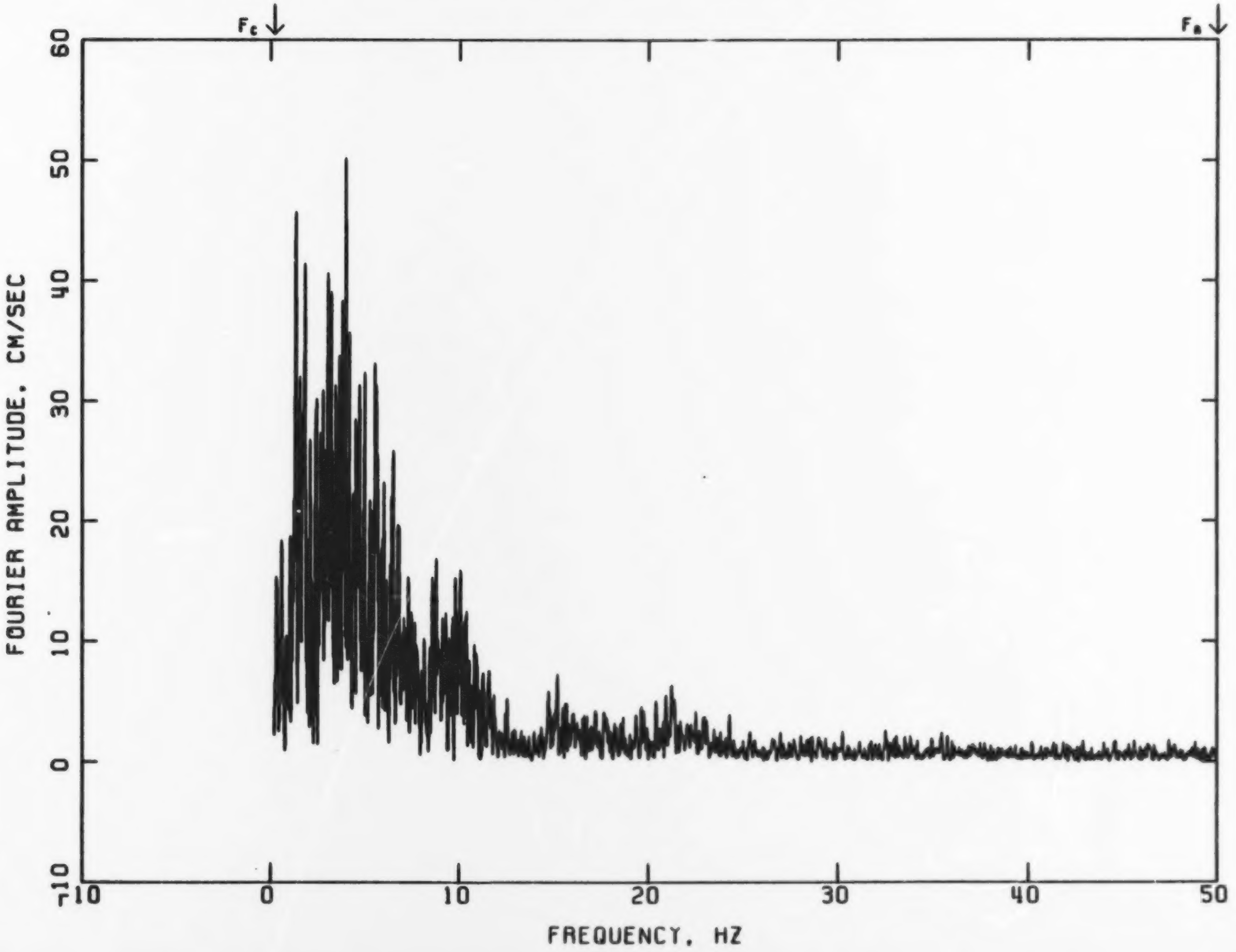
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VINA DEL MAR
290 DEGREES
EARTHQUAKE OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



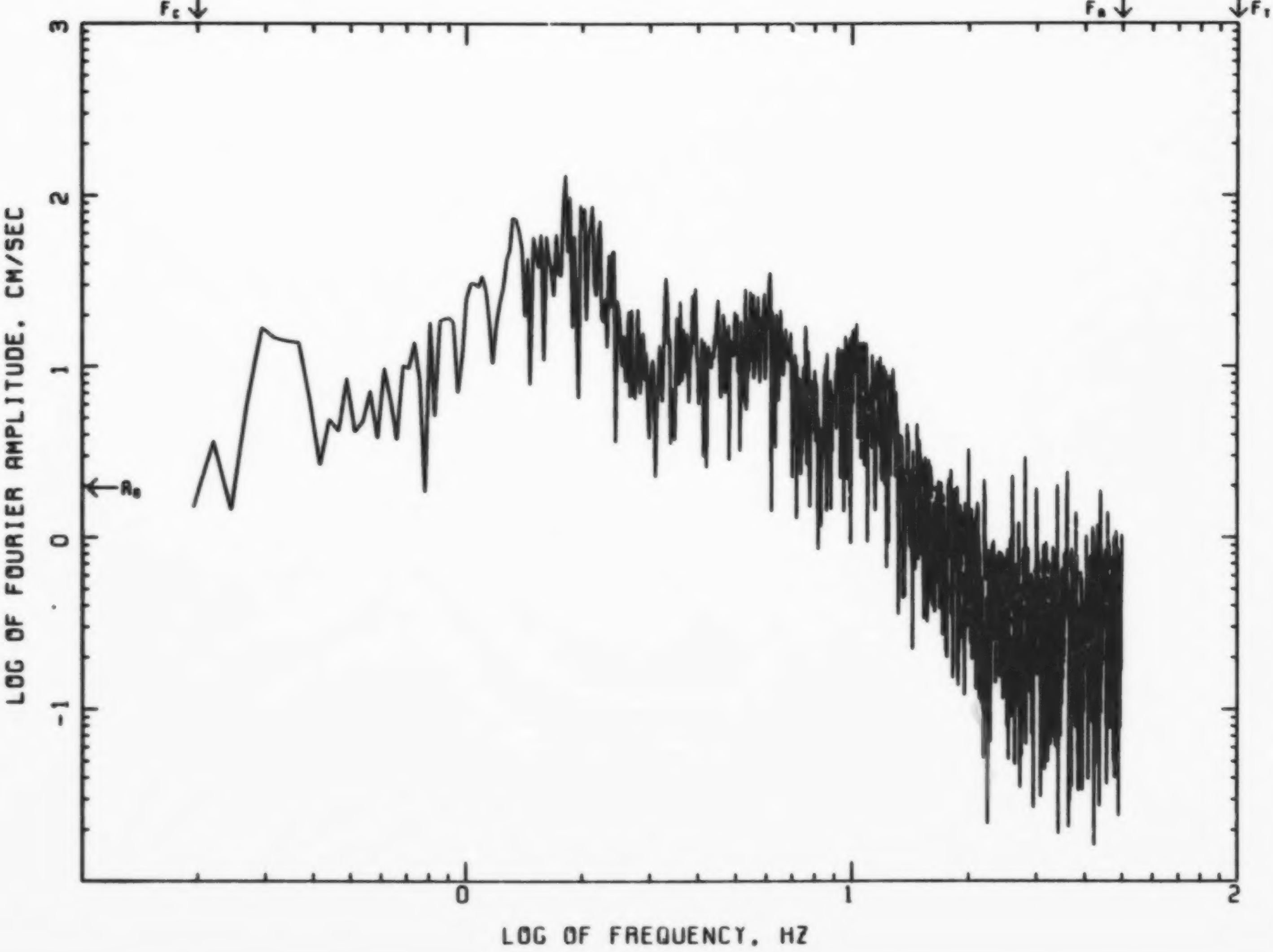
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VINA DEL MAR
UP
EARTHQUAKE OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



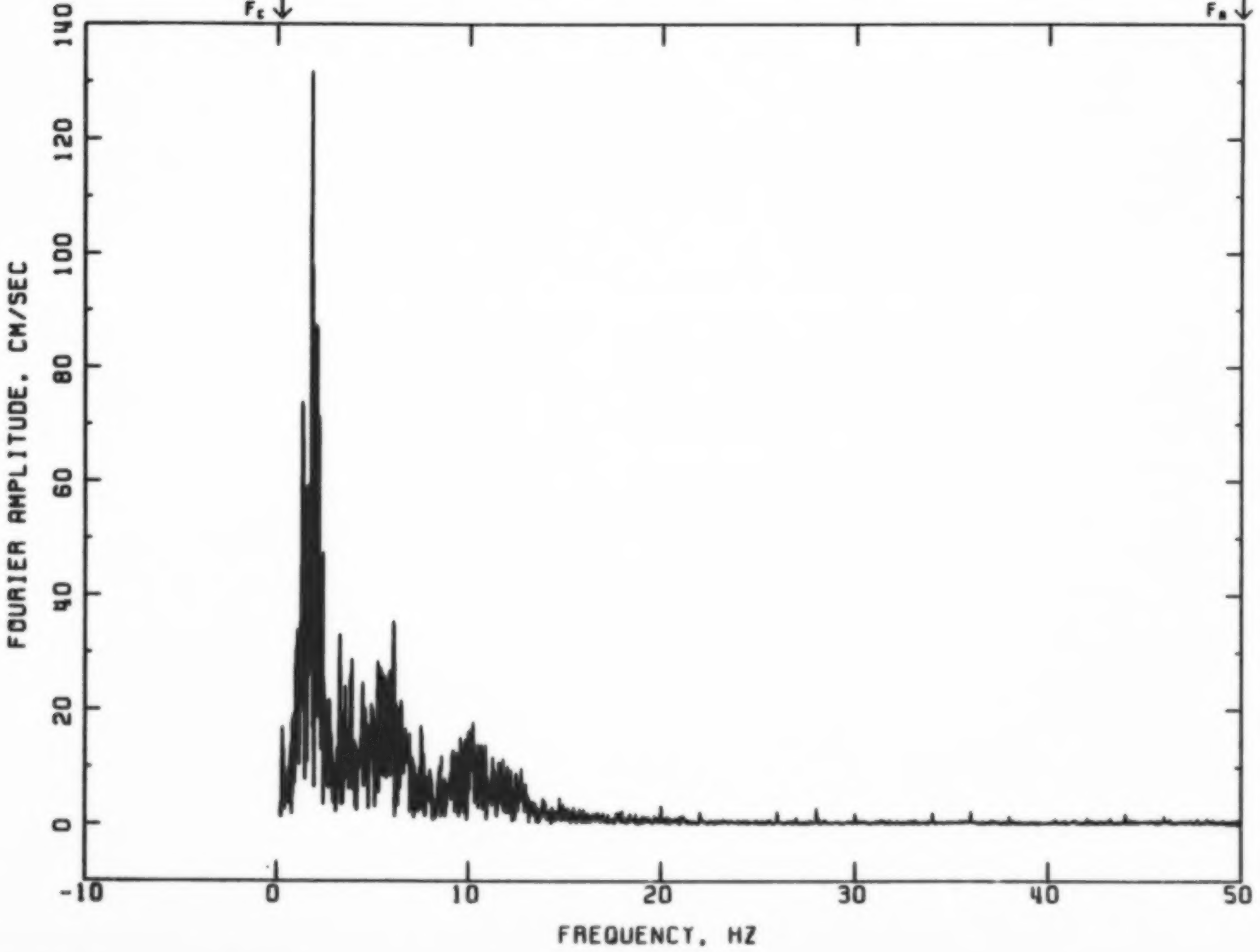
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VINA DEL MAR
UP
EARTHQUAKE OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



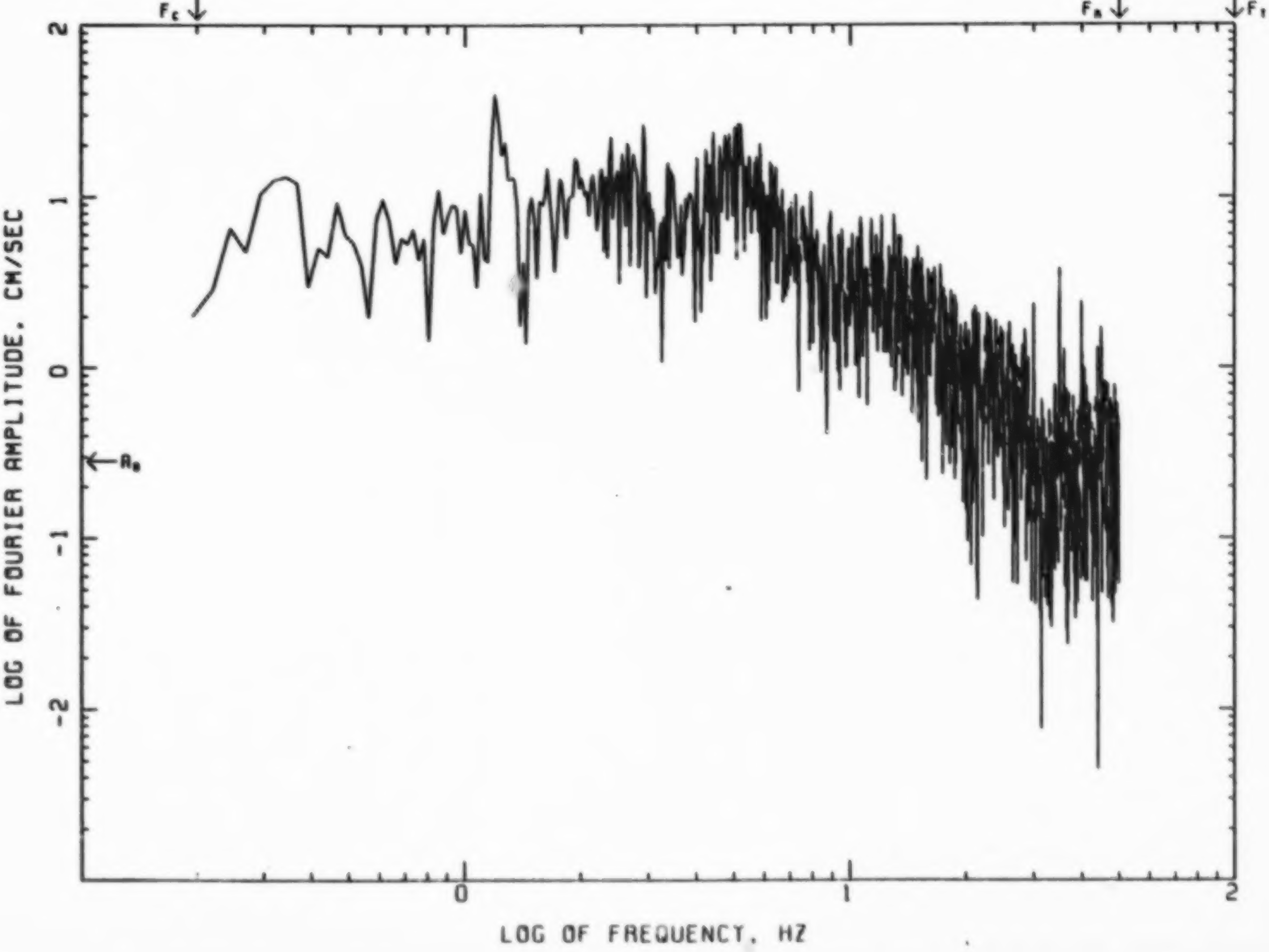
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VINA DEL MAR
200 DEGREES
EARTHQUAKE OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



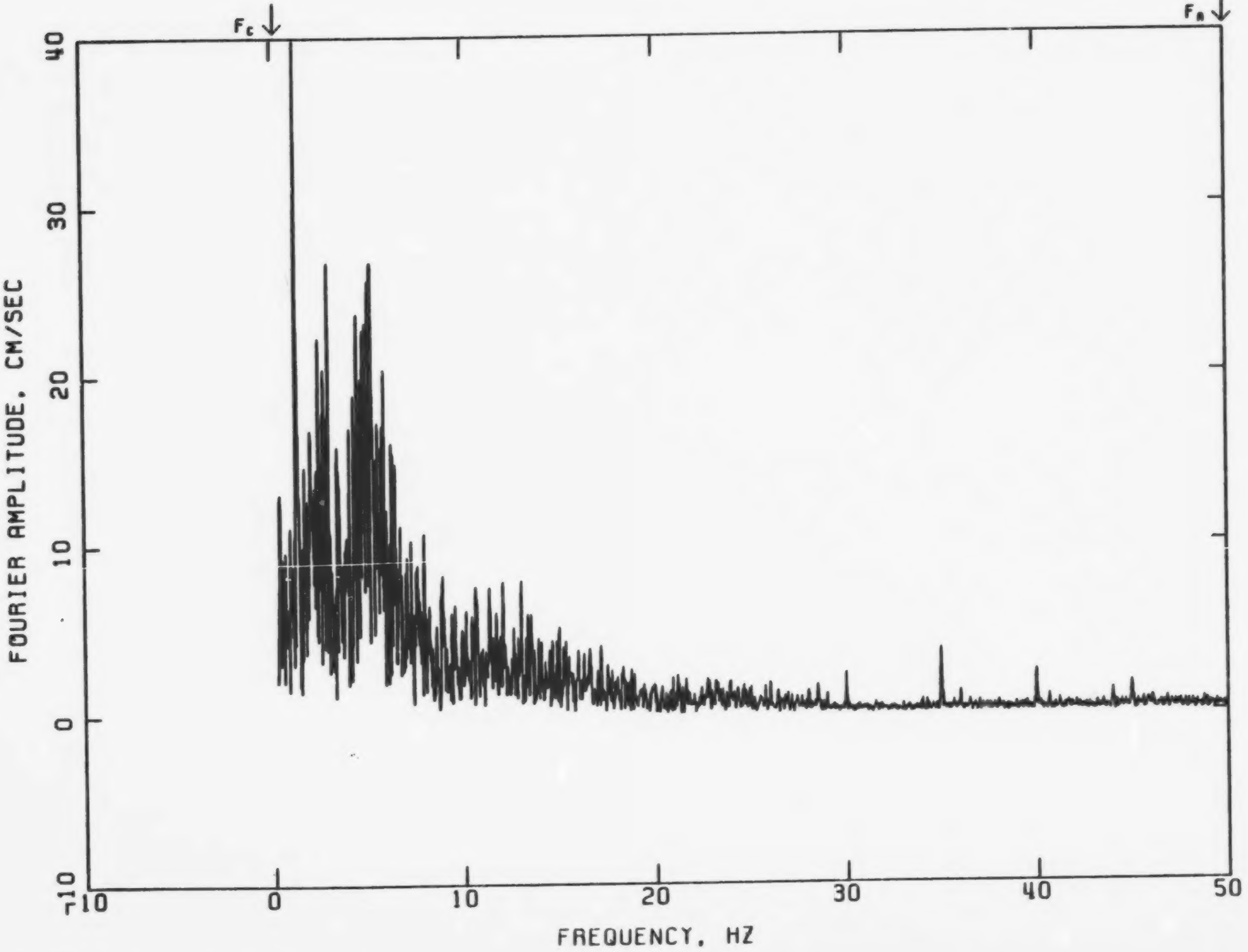
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VINA DEL MAR
200 DEGREES
EARTHQUAKE OF MARCH 3, 1985, 1ST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



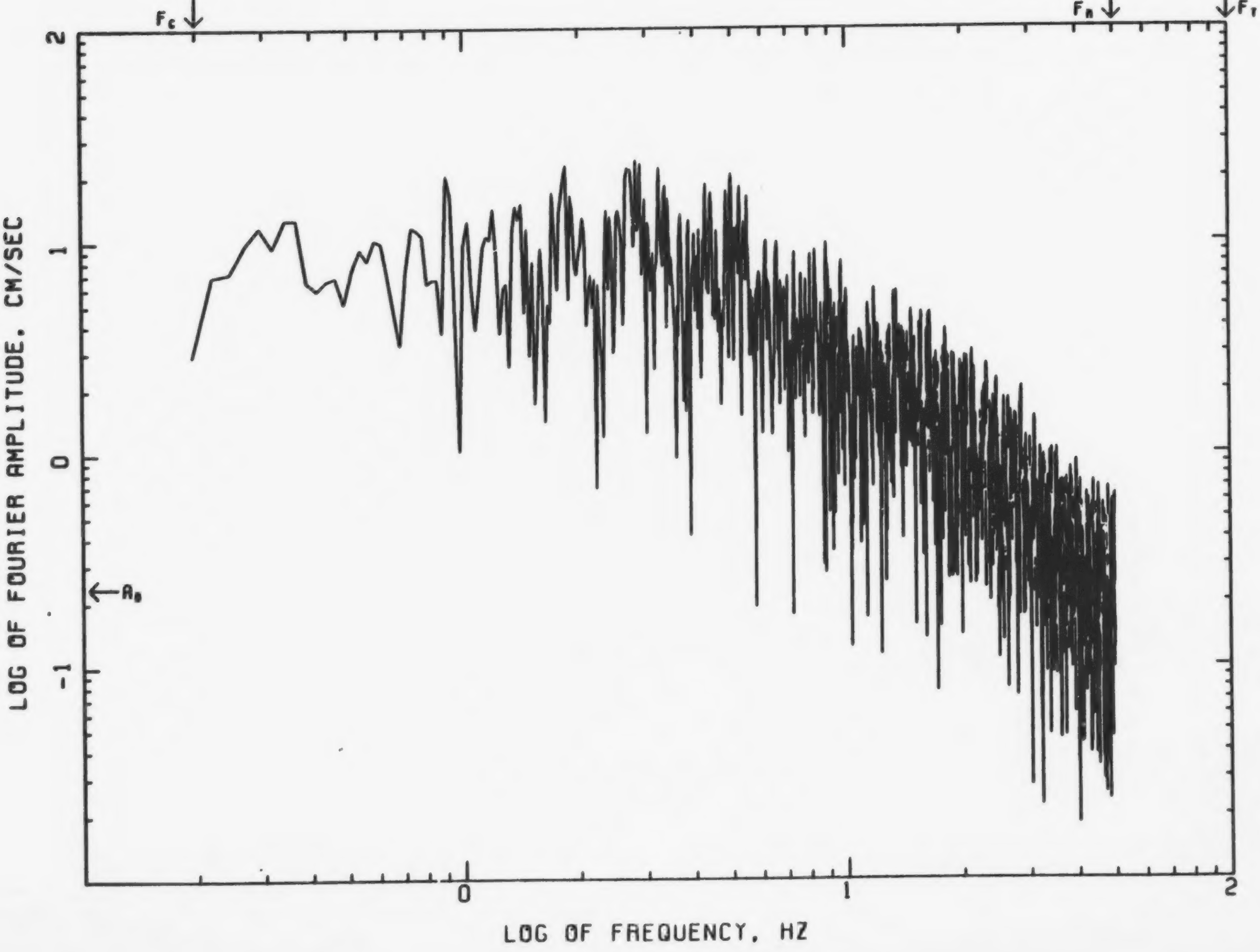
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO, U.T.F.S.M.
160 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



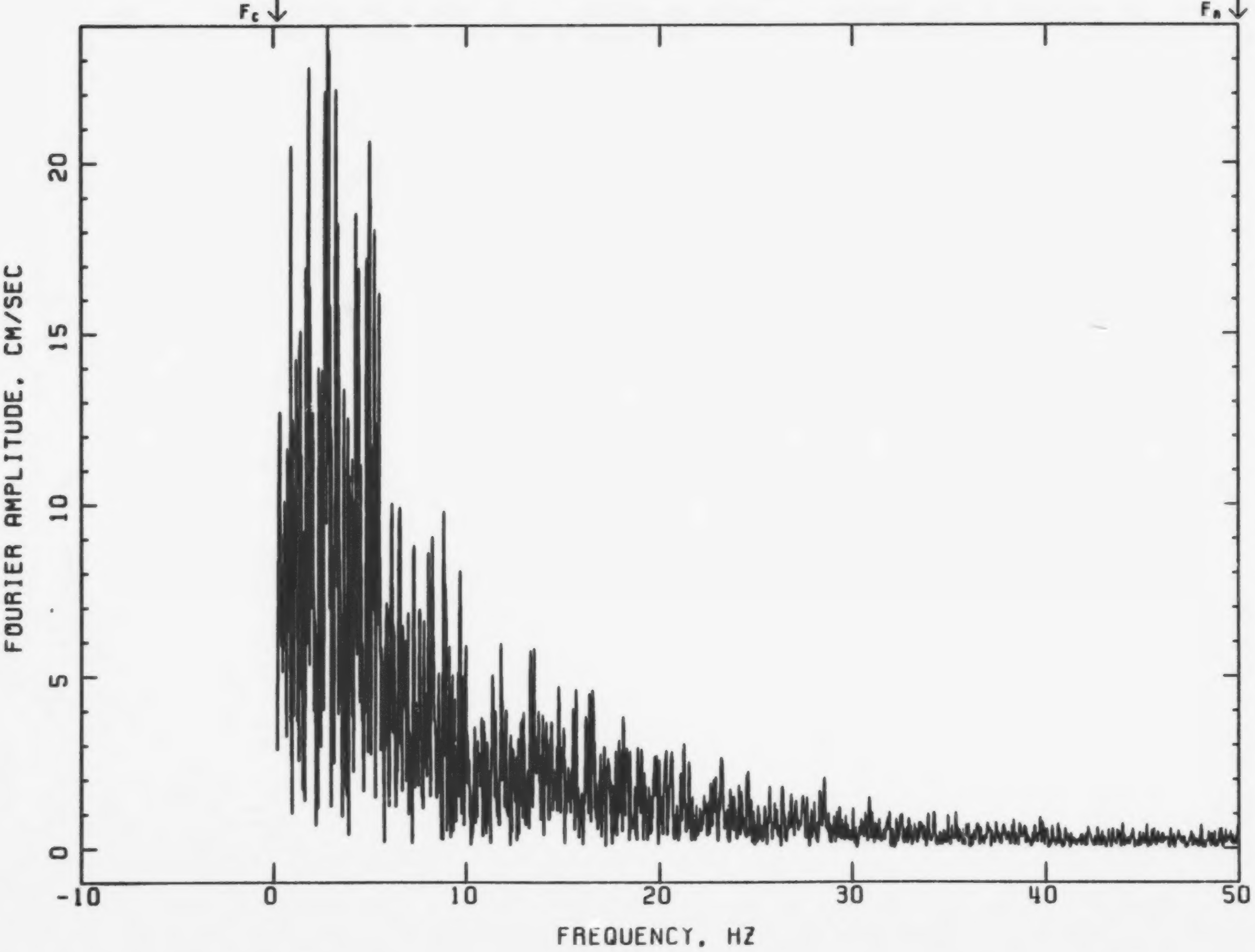
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO, U.T.F.S.M.
160 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



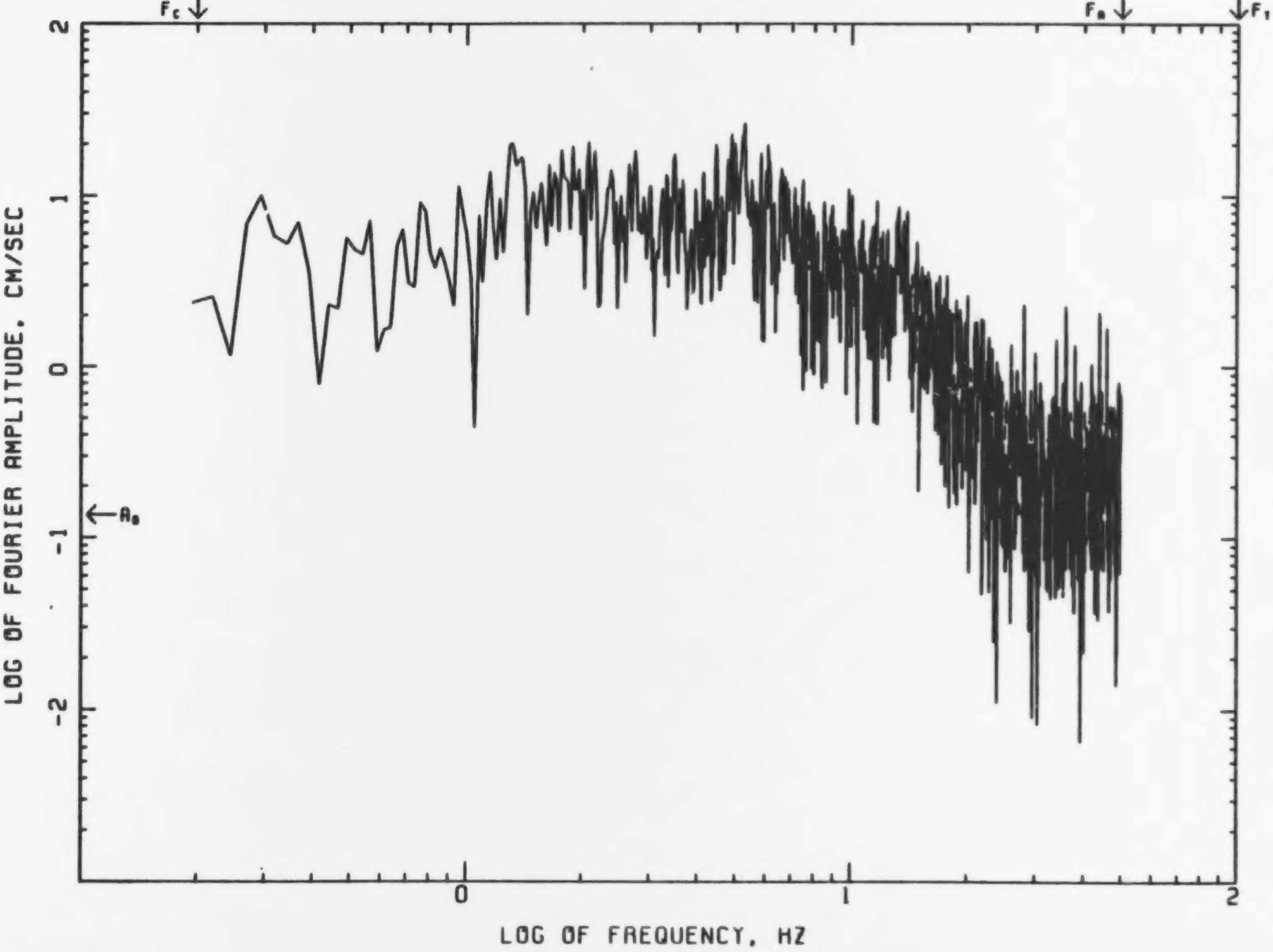
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO, U.T.F.S.M.
UP
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



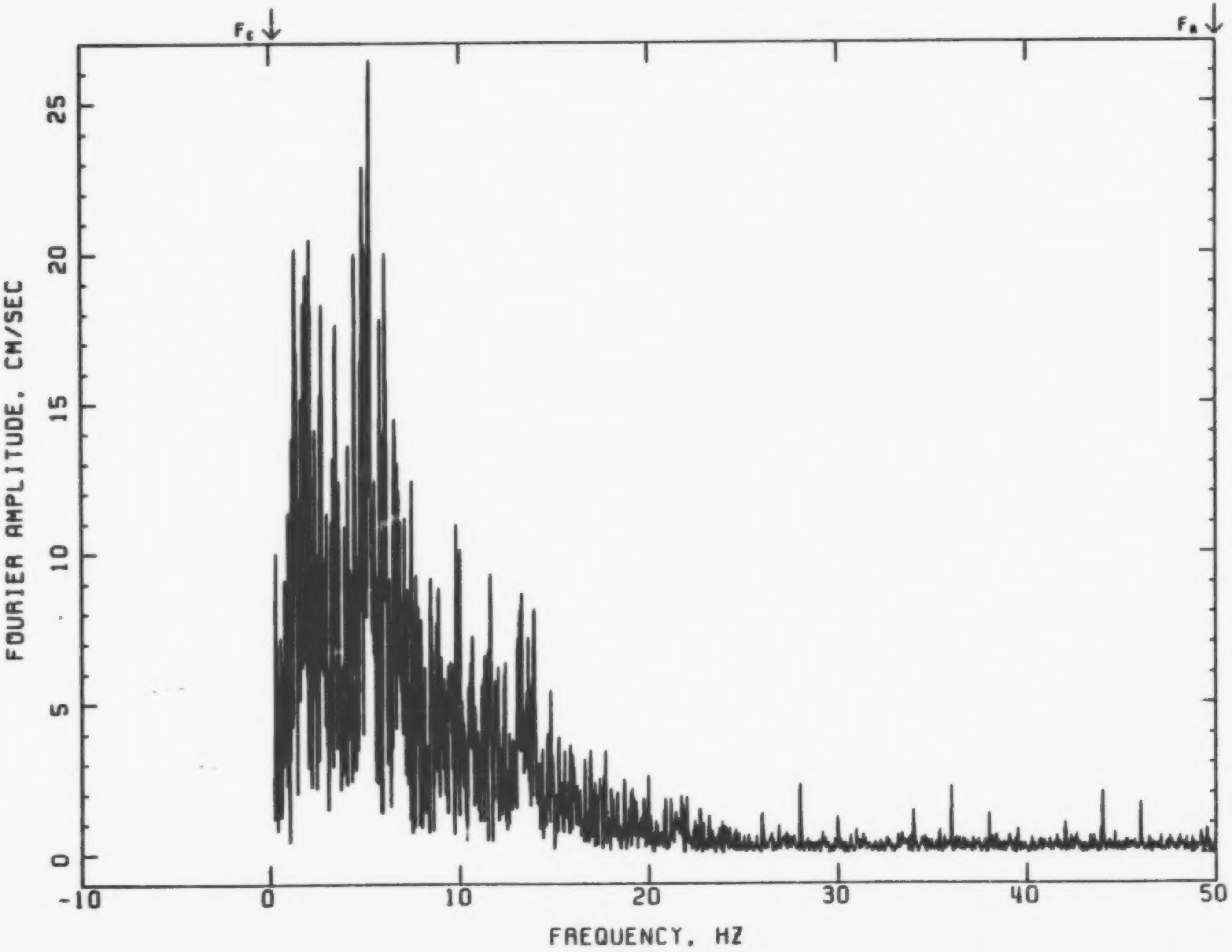
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO, U.T.F.S.M.
UP
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



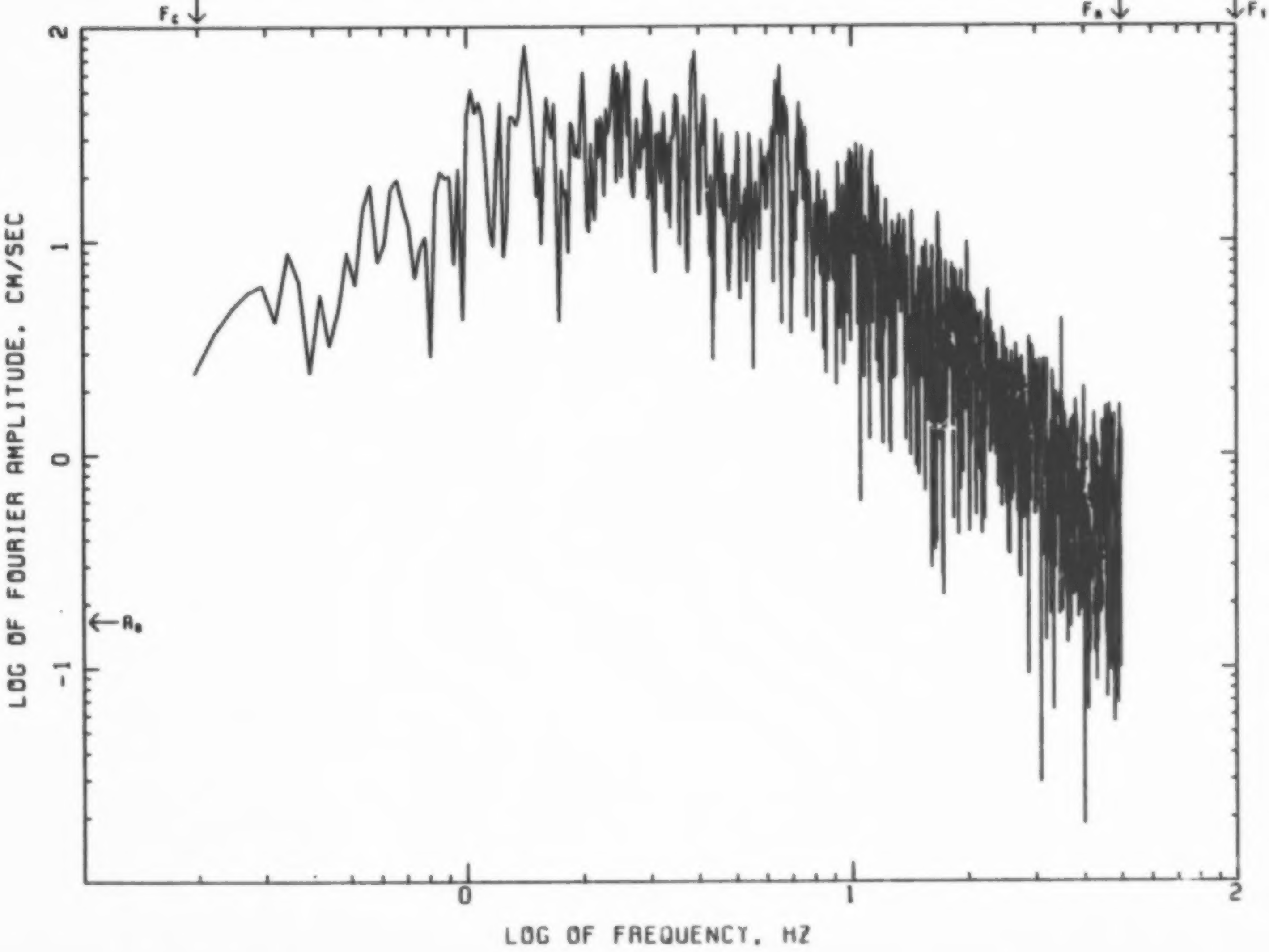
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO, U.T.F.S.M.
070 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



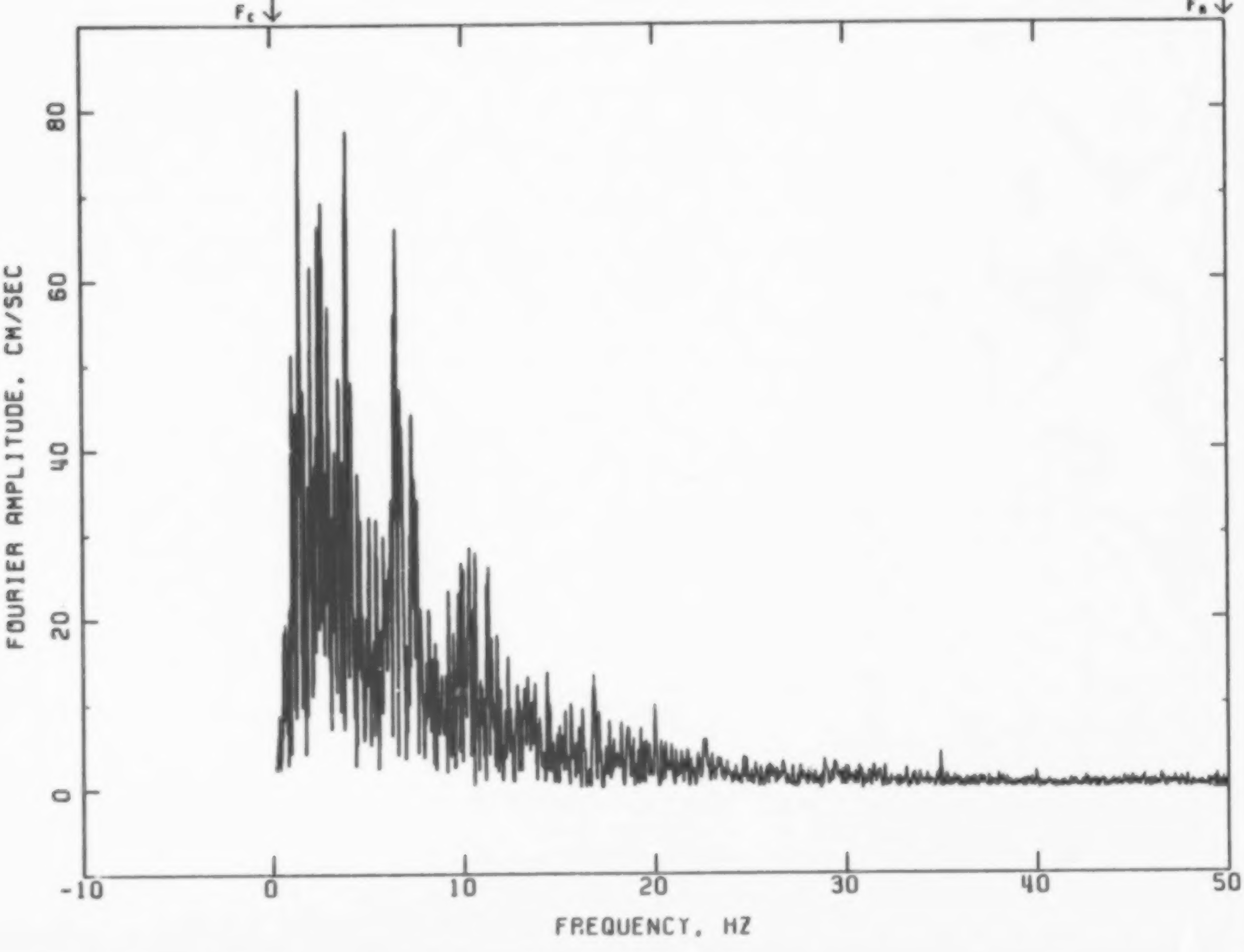
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO, U.T.F.S.M.
070 DEGREES
EARTHQUAKE OF MARCH 3, 1985, FIRST AFTERSHOCK (1 HOUR)
BUTTERWORTH FILTER AT 0.2 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



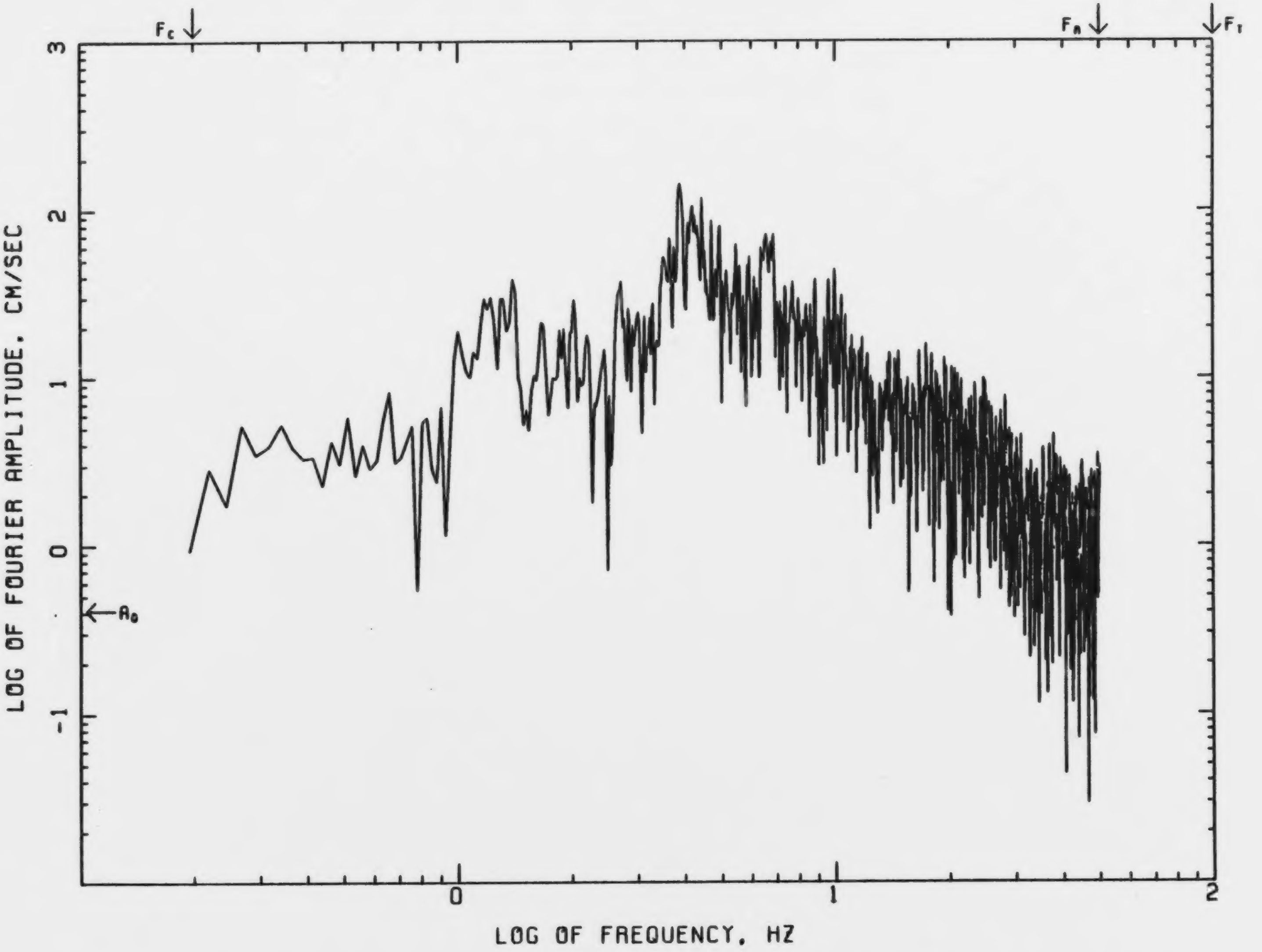
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO
100 DEGREES
EARTHQUAKE OF APRIL 8, 1985
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



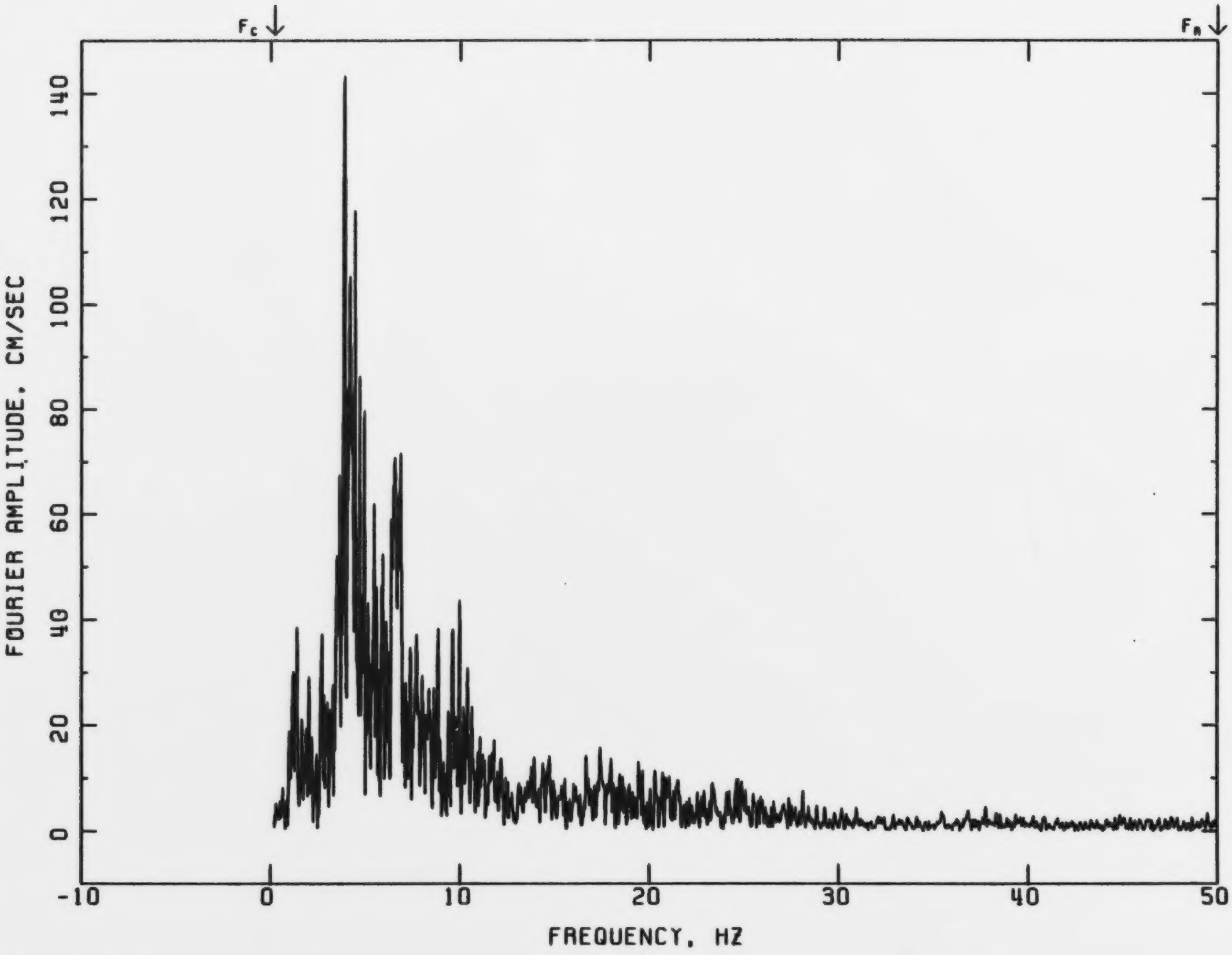
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO
100 DEGREES
EARTHQUAKE OF APRIL 8, 1985
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



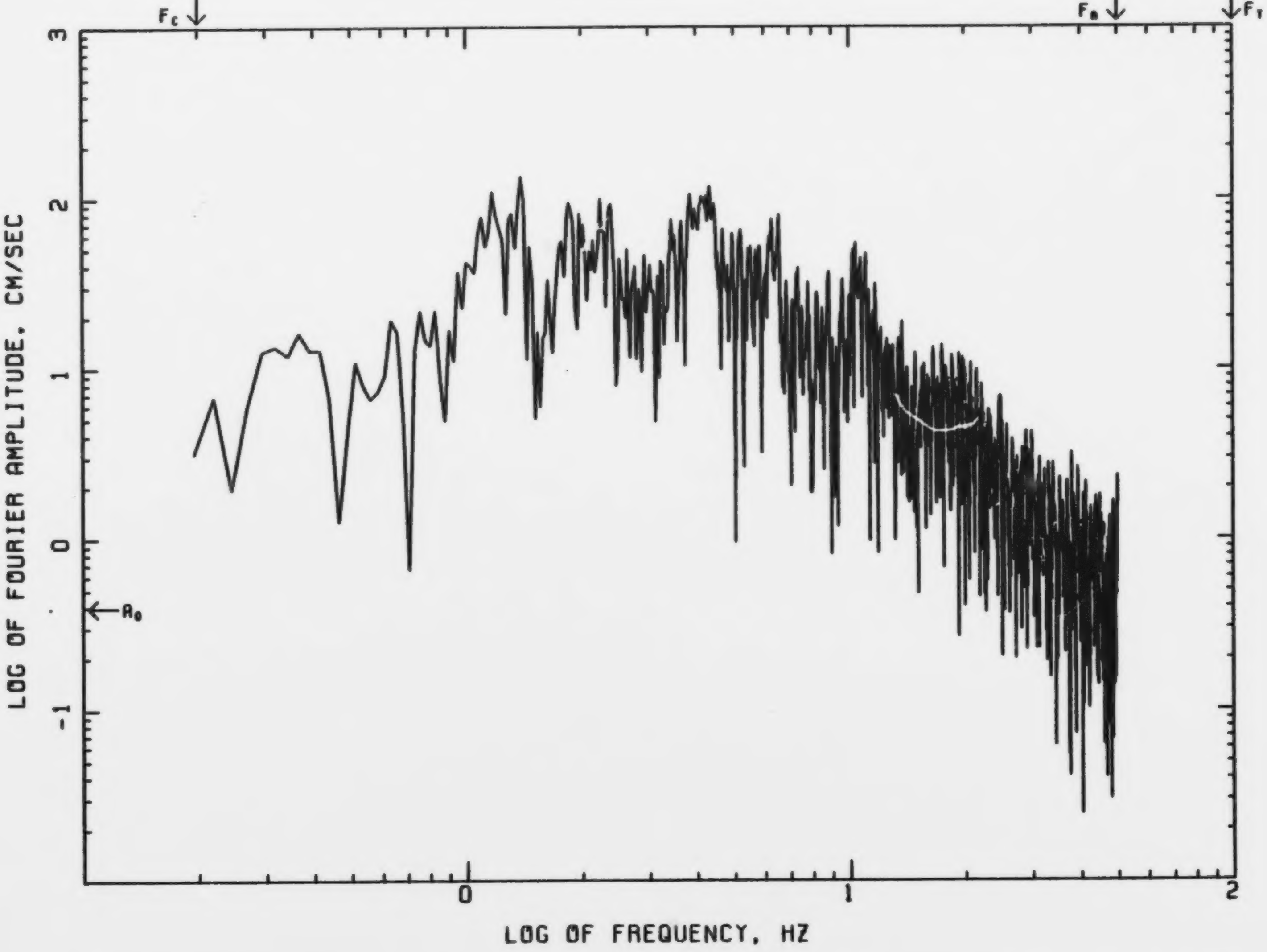
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO
UP
EARTHQUAKE OF APRIL 8, 1985
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO
UP
EARTHQUAKE OF APRIL 8, 1985
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO
10 DEGREES
EARTHQUAKE OF APRIL 8, 1985
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



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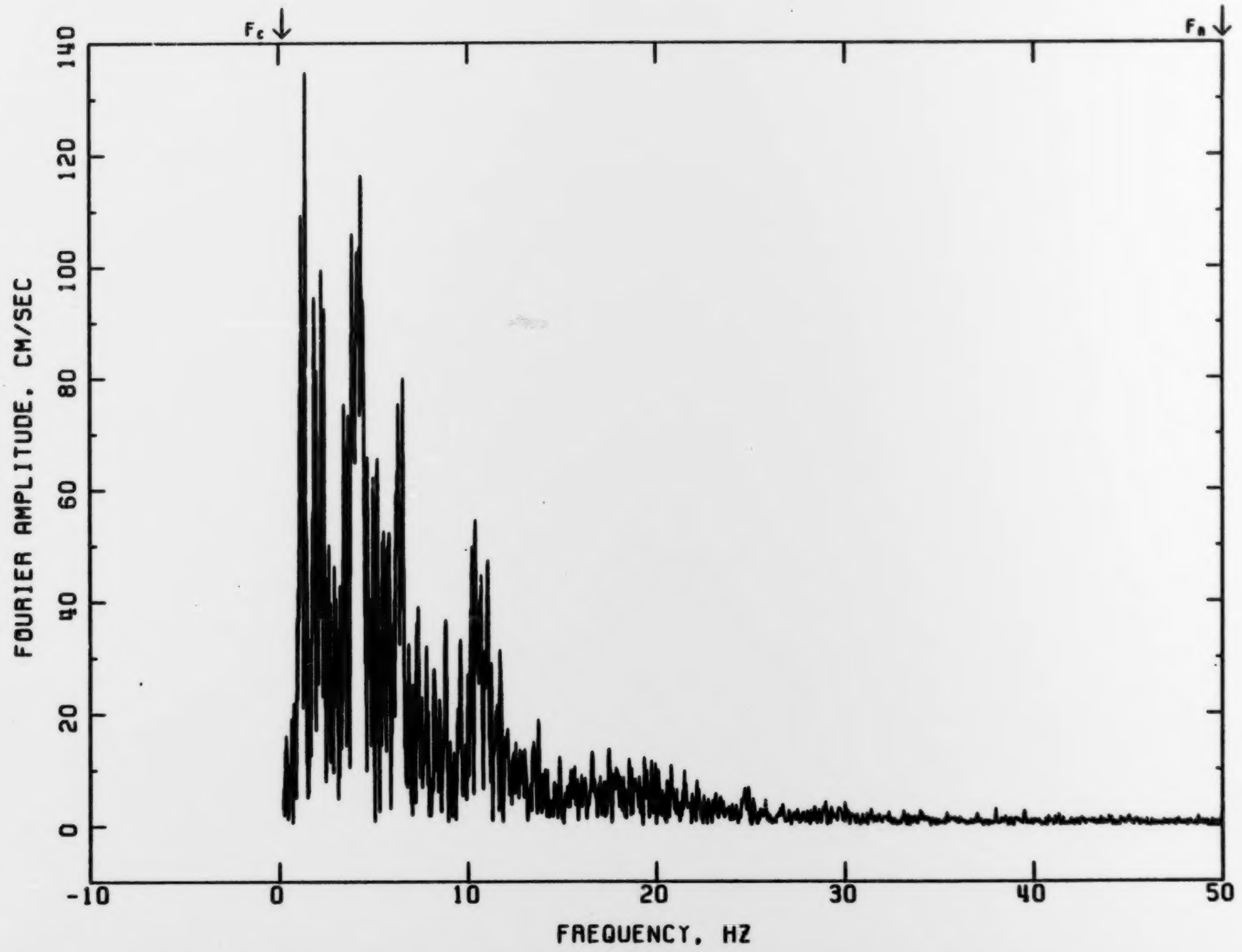
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO
10 DEGREES
EARTHQUAKE OF APRIL 8, 1985
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



APPENDIX A

DATA PROCESSED IN CHILE

Part of the 3 March 1985 main shock accelerograms were processed in Chile by Saragoni and others (1985). In this appendix, the processed data is presented via the plots made by using the software of the USGS.

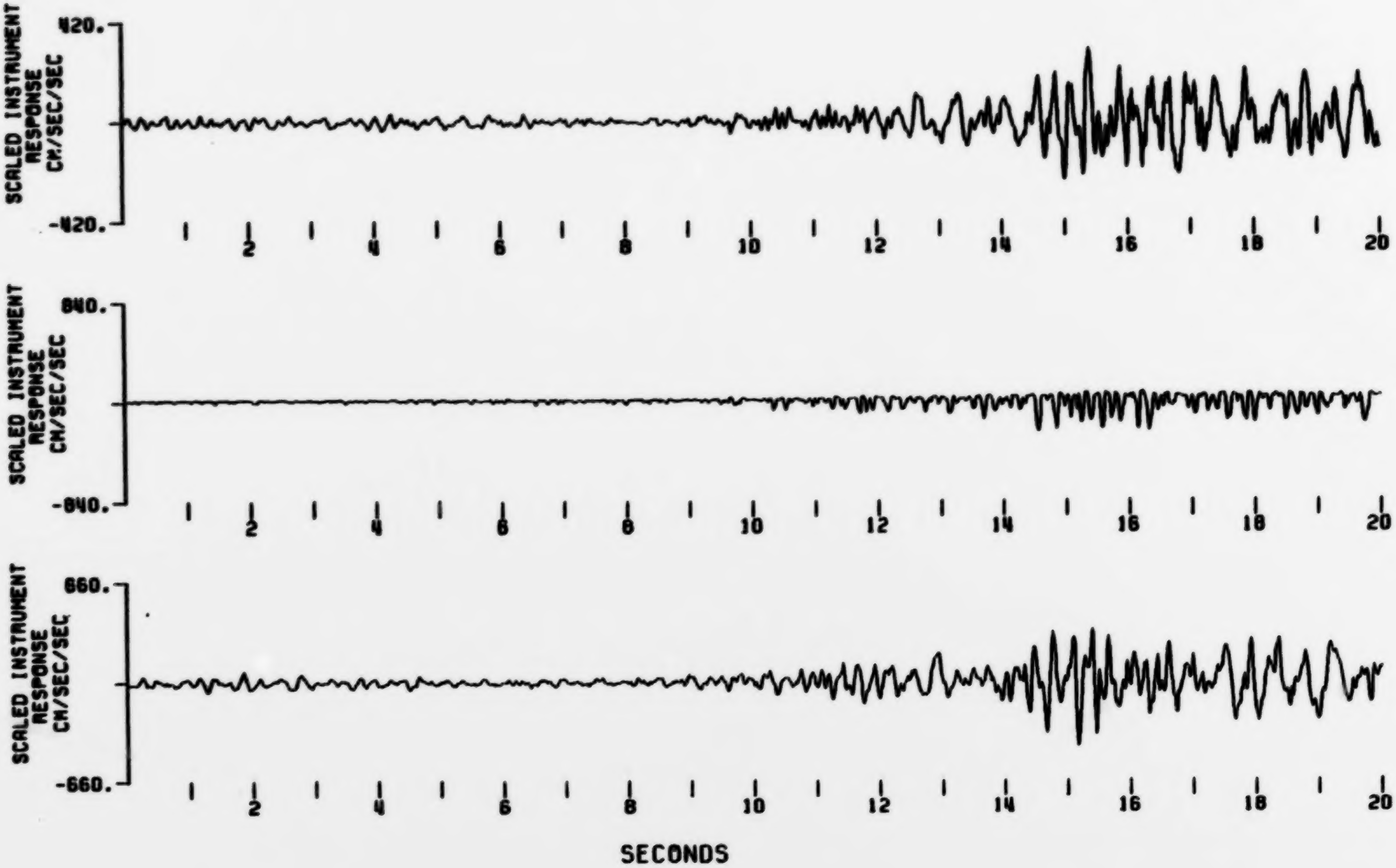
The processed data in this appendix is provided as in the following matrix:

Table A-1
Matrix of Plots

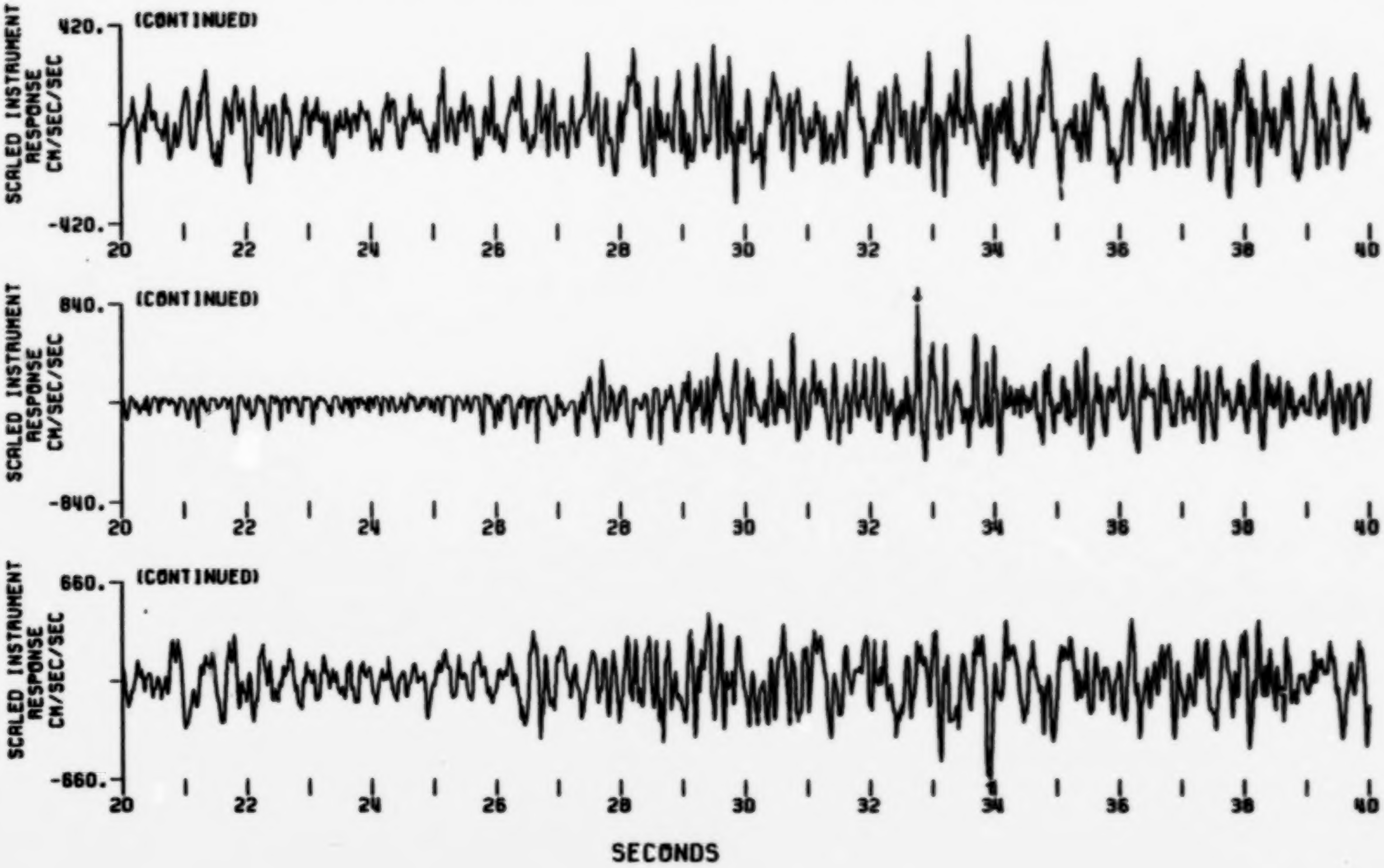
Station	Uncorrected Accelerograms	Relative Velocity Response Spectrum	Tripartite Response Spectrum	Fourier Amplitude Spectrum of Acceleration
Llolleo	pages			
100 degrees	A-1	A-22	A-33	A-44-45
UP	to	A-23	A-34	A-46-47
10 degrees	A-6	A-24	A-35	A-48-49
Vina Del Mar				
290 degrees	A- 7	A-25	A-36	A-50-51
UP	to	A-26	A-37	A-52-53
200 degrees	A-12	A-27	A-38	A-54-55
Valparaiso (UFSM)				
160 degrees	A-13	A-28	A-39	A-56-57
UP	to	A-29	A-40	A-58-59
70 degrees	A-16	A-30	A-41	A-60-61
Valparaiso (El Almandrel)				
50 degrees	A-17	A-31	A-42	A-62-63
UP*	to	----	----	----
140 degrees	A-21	A-32	A-43	A-64-65

*Not available

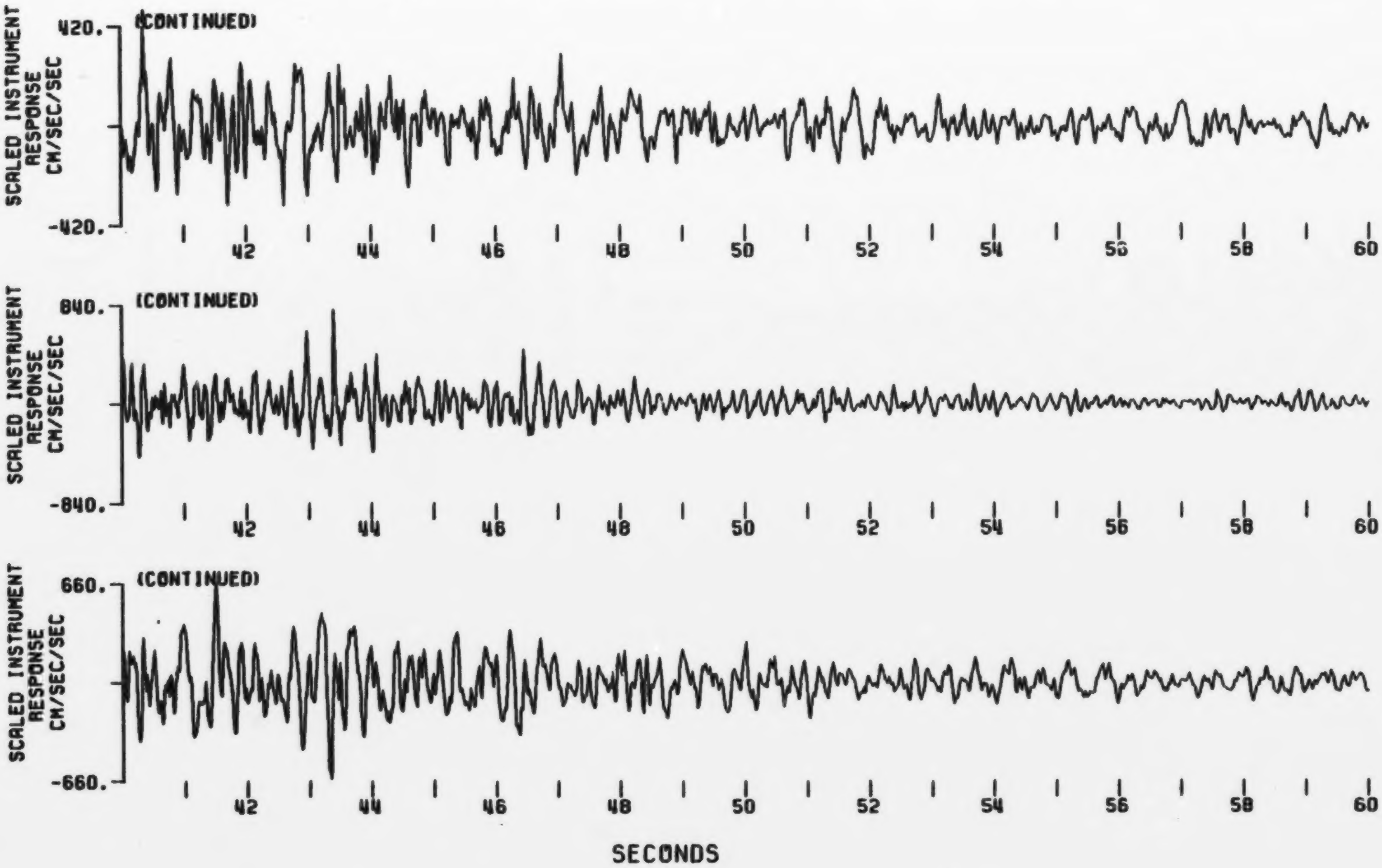
UNCORRECTED ACCELEROGRAM
LLOLLEO, D.I.C
100 DEGREES, UP, 010 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES (CM/SEC/SEC): 417.86 835.53 -655.77



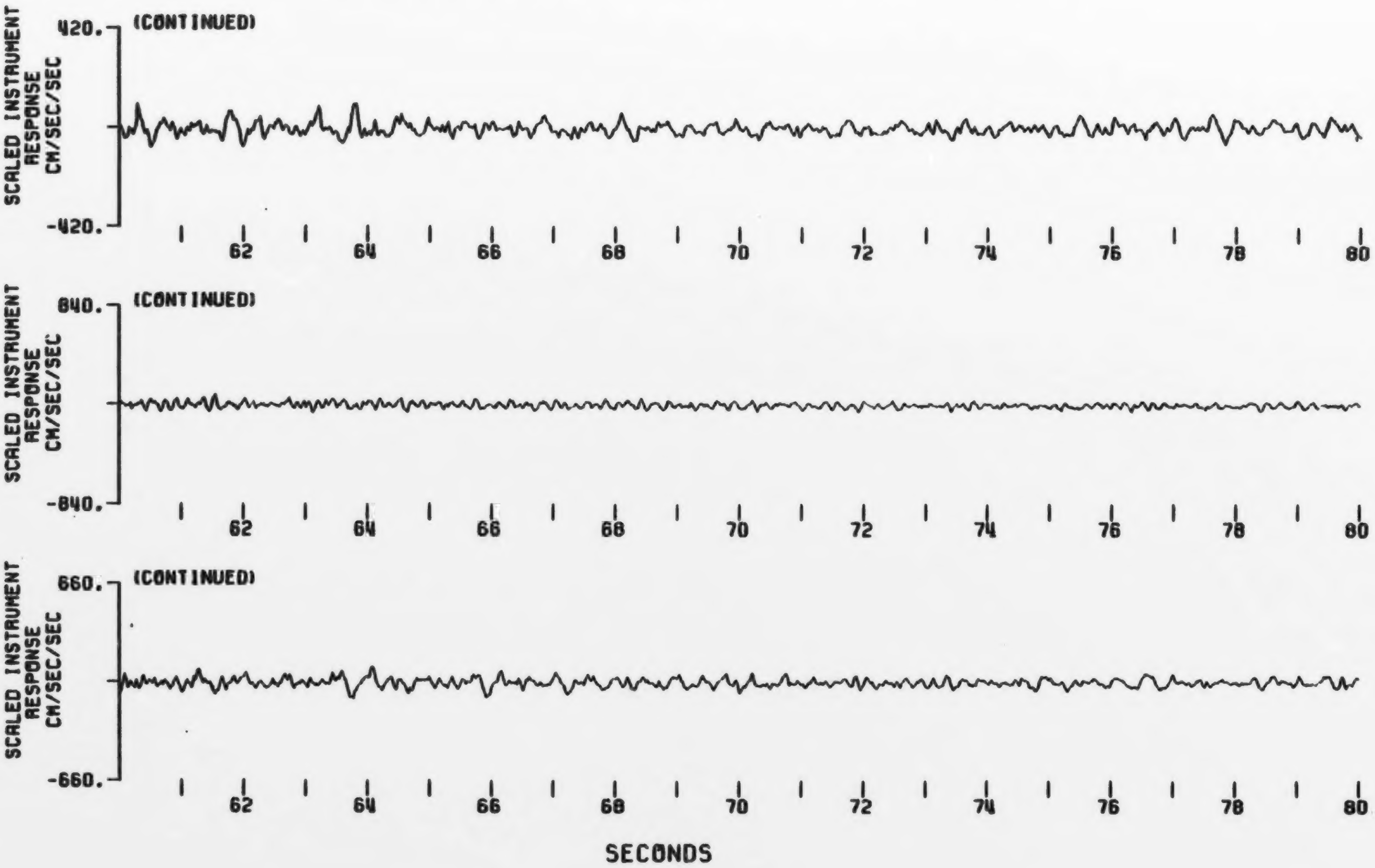
UNCORRECTED ACCELEROGRAM
LLOLLEO, D.I.C
100 DEGREES, UP, 010 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): 417.86 835.53 -655.77



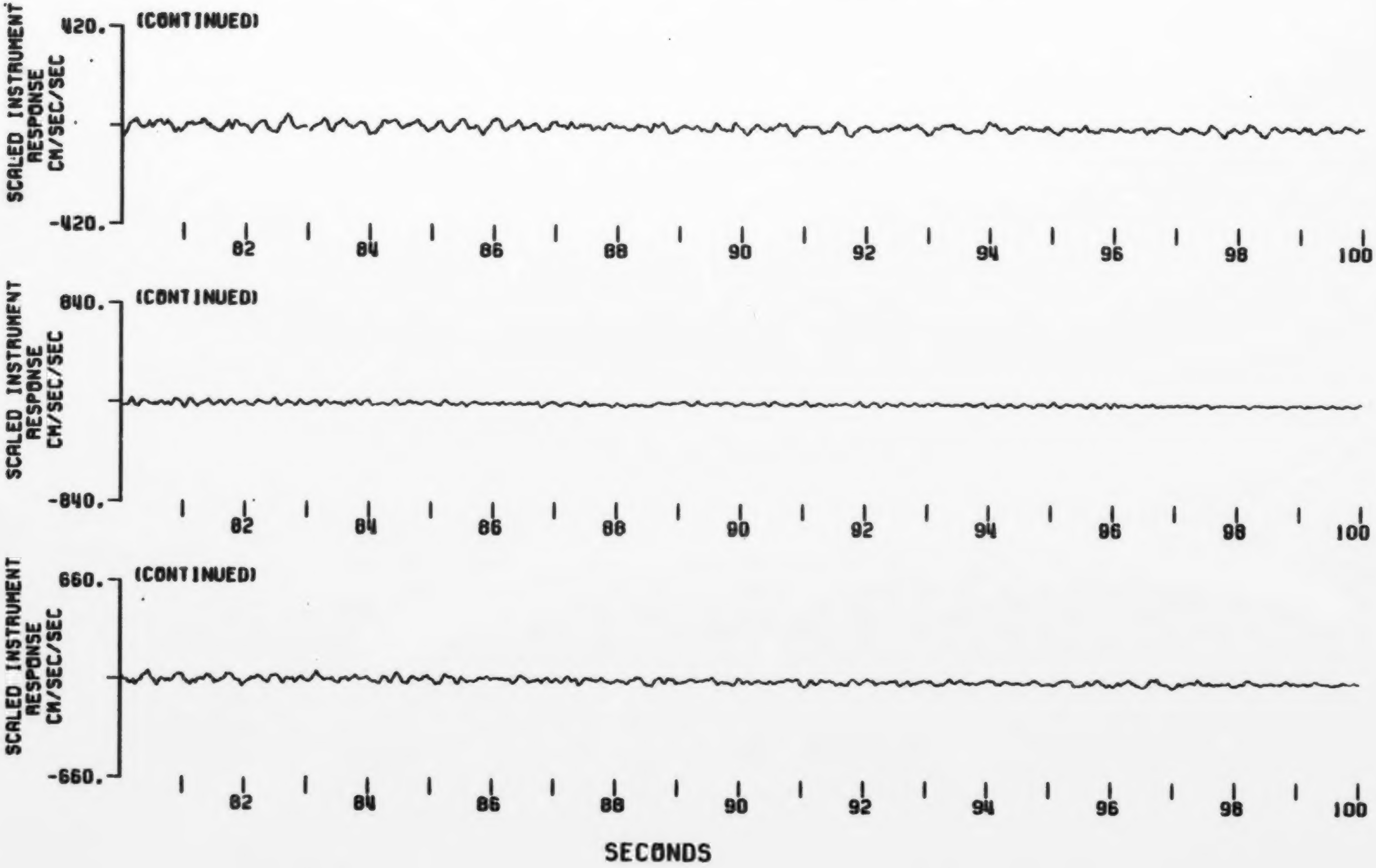
UNCORRECTED ACCELEROGRAM
LLOLLEO, D.I.C
100 DEGREES, UP, 010 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES (CM/SEC/SEC): 417.86 835.53 -655.77



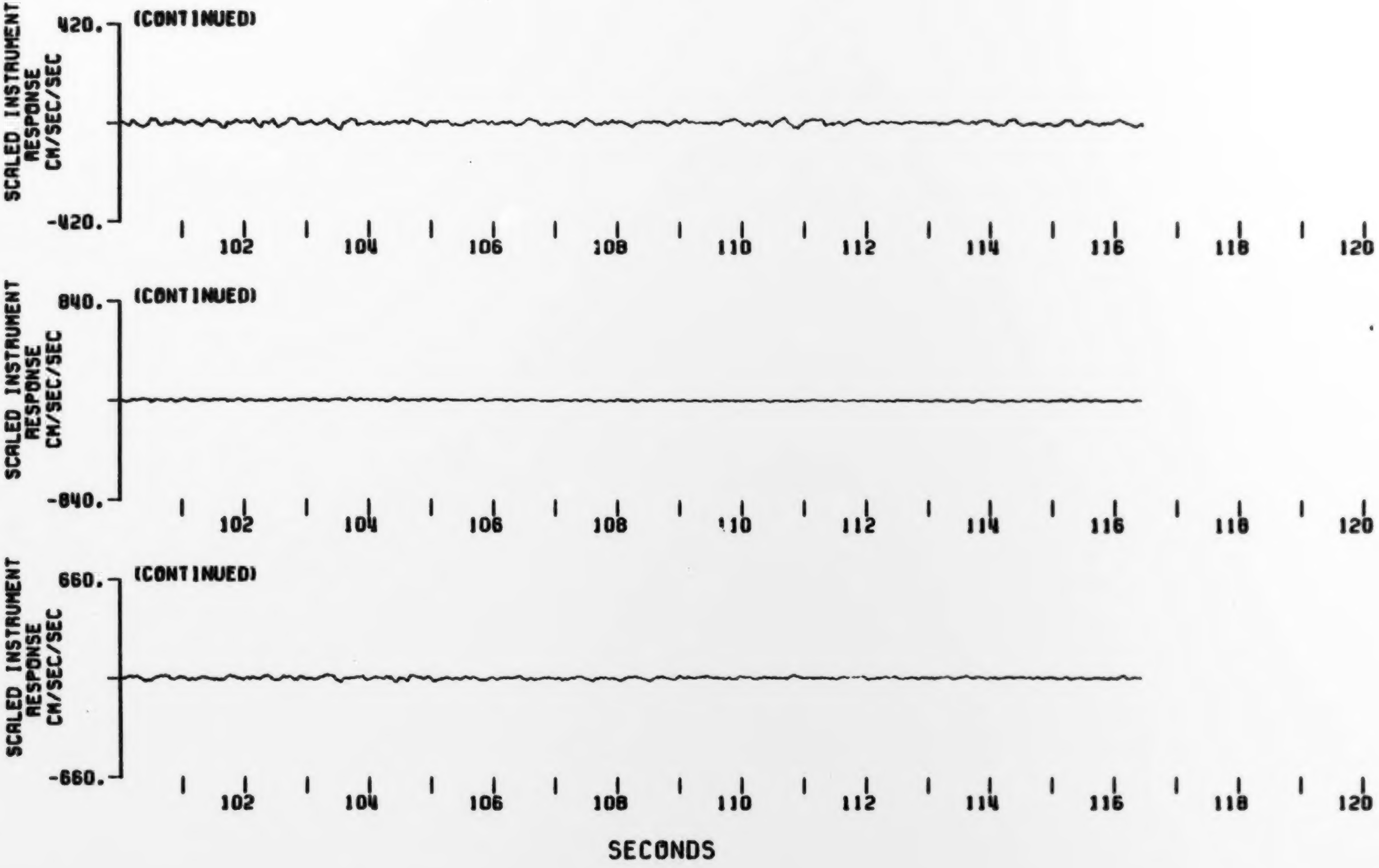
UNCORRECTED ACCELEROGRAM
LLOLLEO, D.I.C
100 DEGREES, UP, 010 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES (CM/SEC/SEC): 417.86 835.53 -655.77



UNCORRECTED ACCELEROGRAM
LLOLLEO, D.I.C
100 DEGREES, UP, 010 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES (CM/SEC/SEC): 417.86 835.53 -655.77

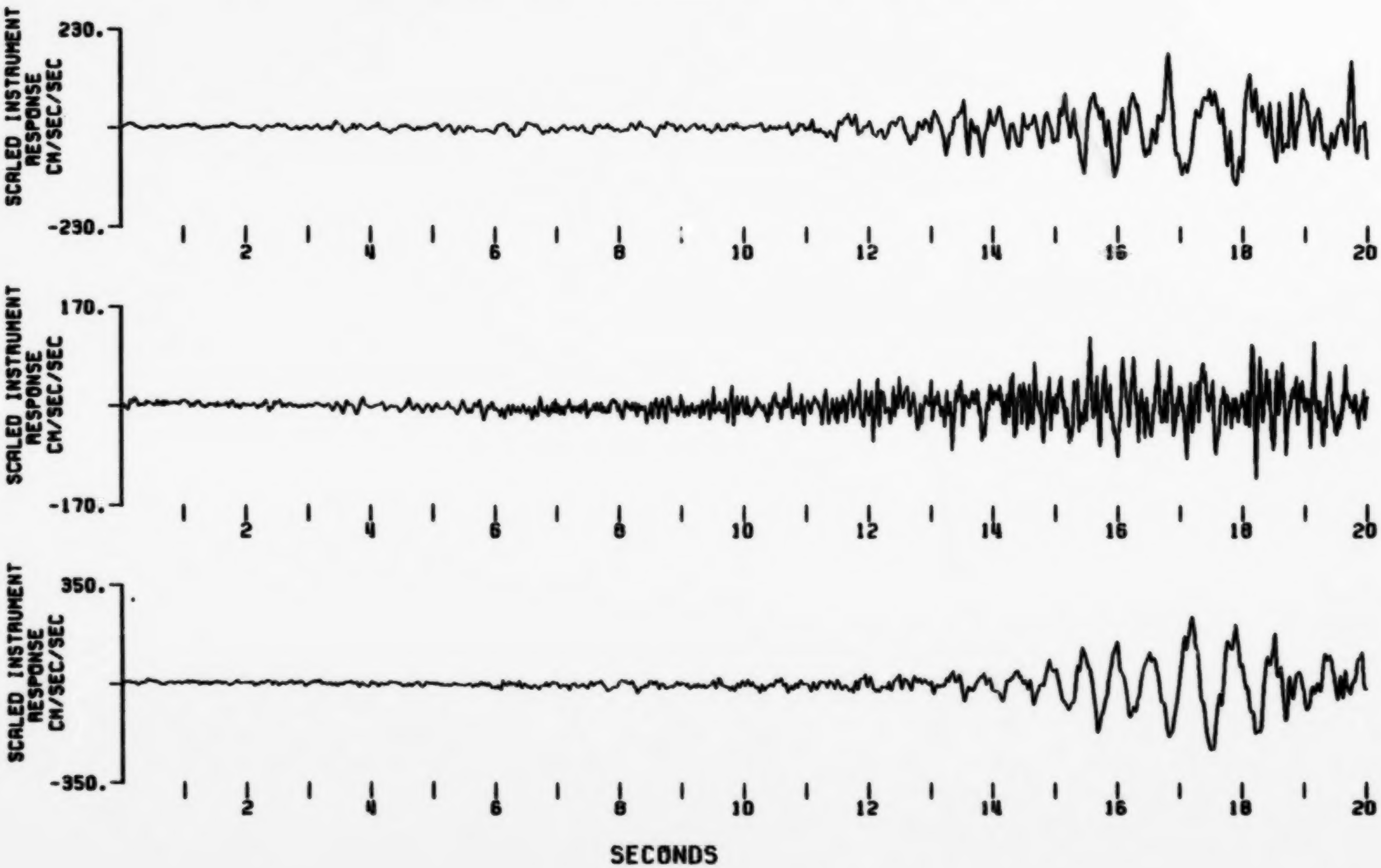


UNCORRECTED ACCELEROGRAM
LLOLLEO, D.I.C
100 DEGREES, UP, 010 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): 417.86 835.53 -655.77



1

UNCORRECTED ACCELEROGRAM
VINA DEL MAR, D.I.C
290 DEGREES, UP, 200 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES (CM/SEC/SEC): -223.69 -167.69 349.51



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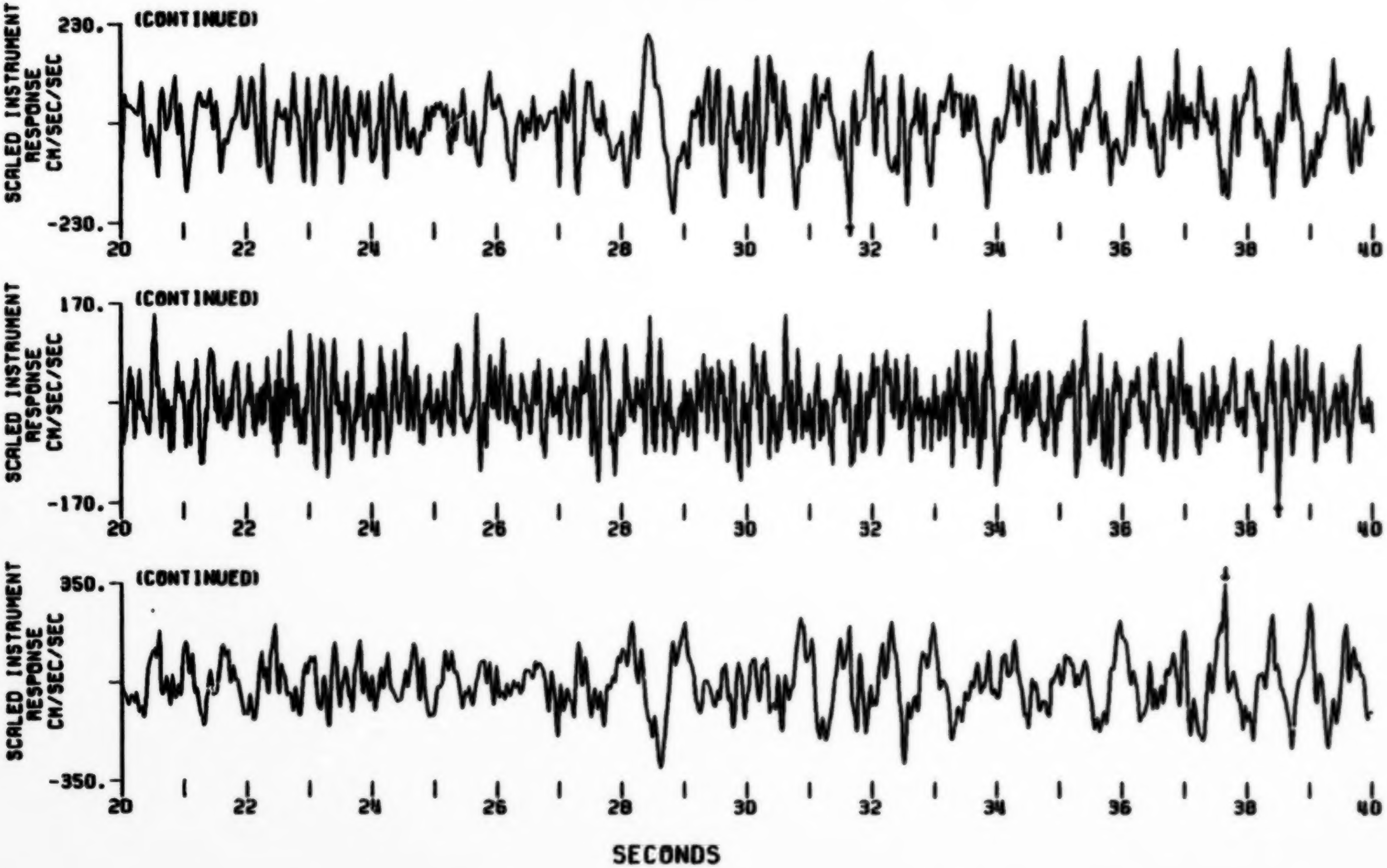
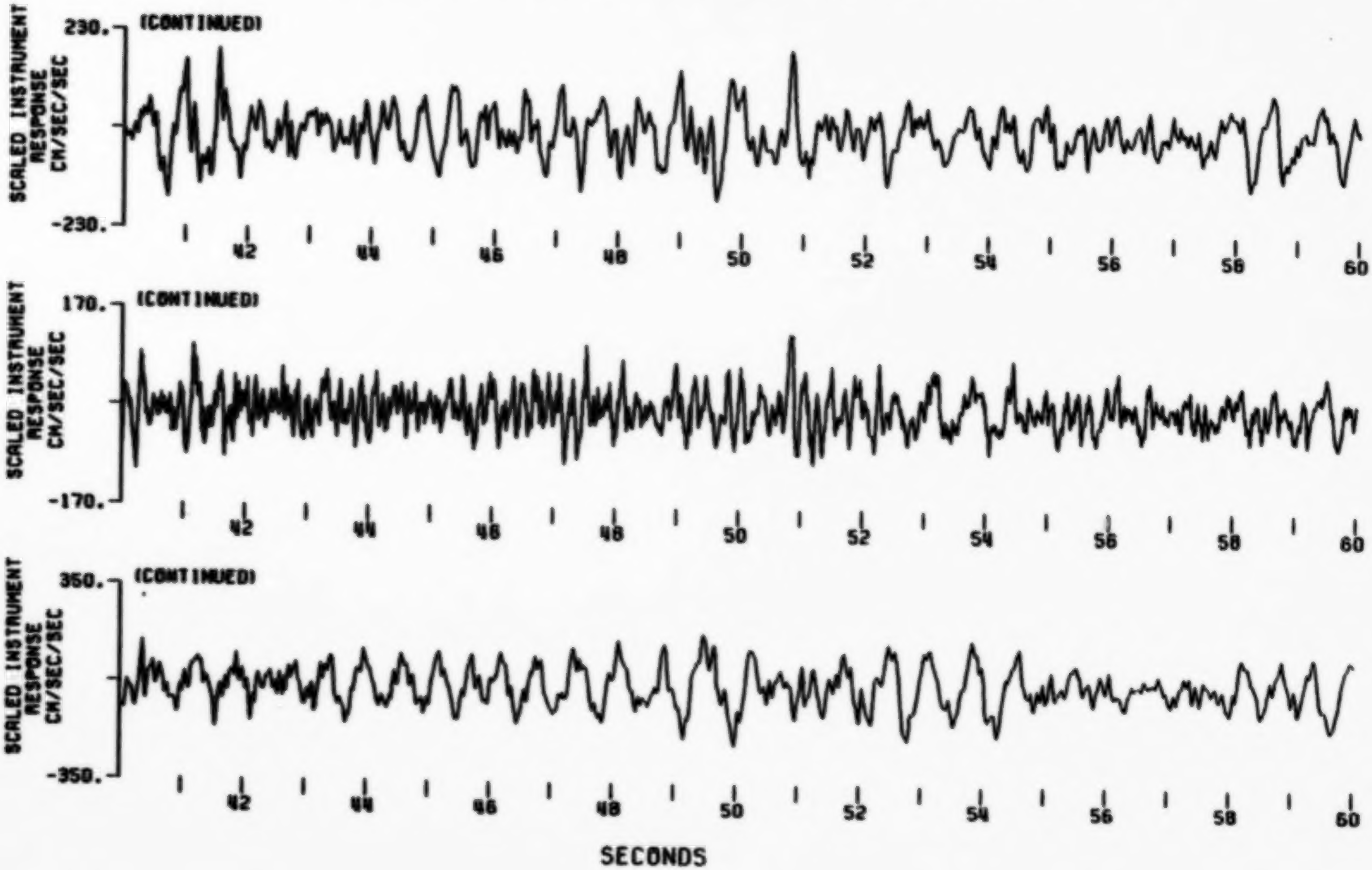
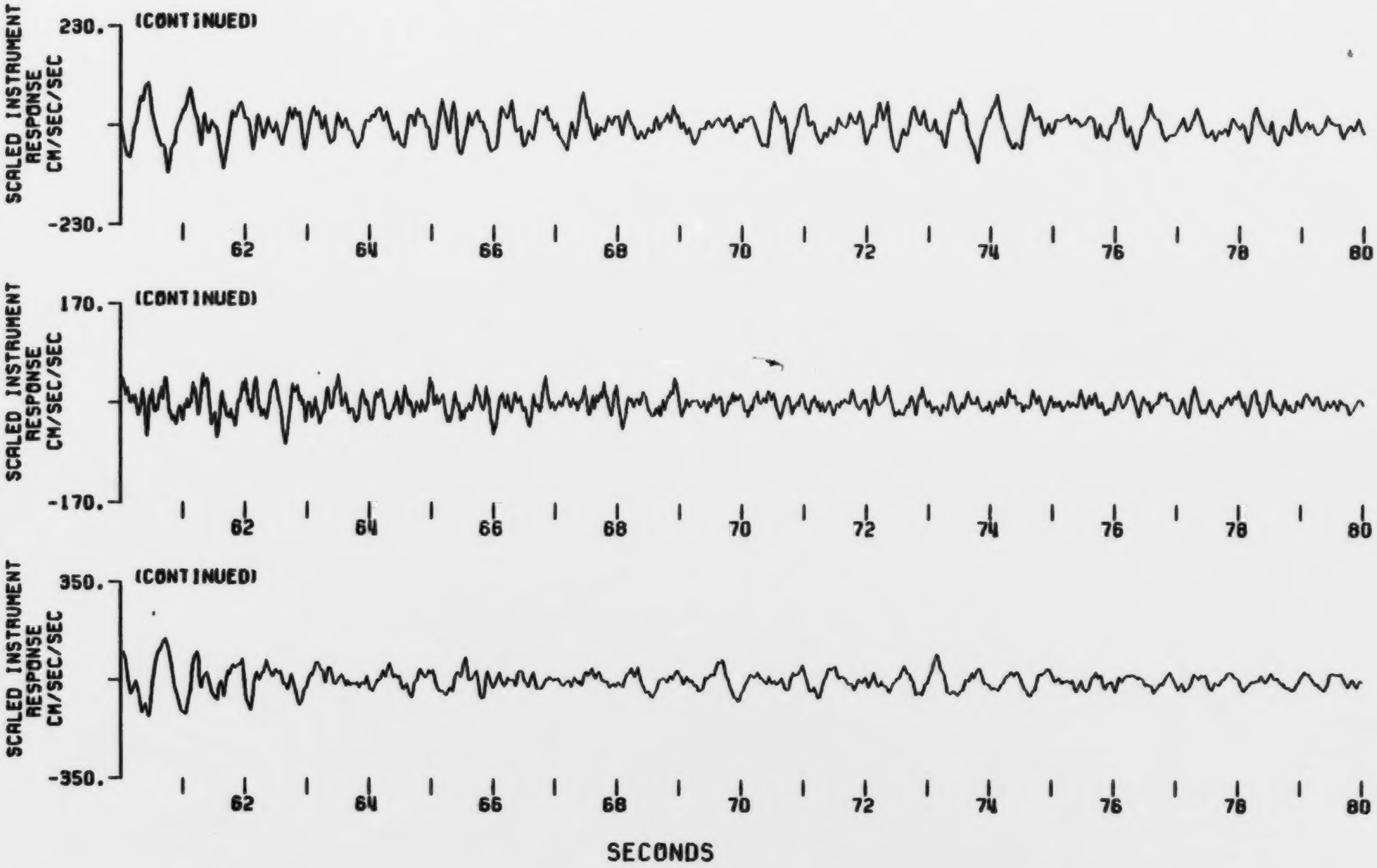
UNCORRECTED ACCELEROGRAM
VINA DEL MAR, D.I.C
290 DEGREES, UP, 200 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES (CM/SEC/SEC): -223.69 -167.69 349.51



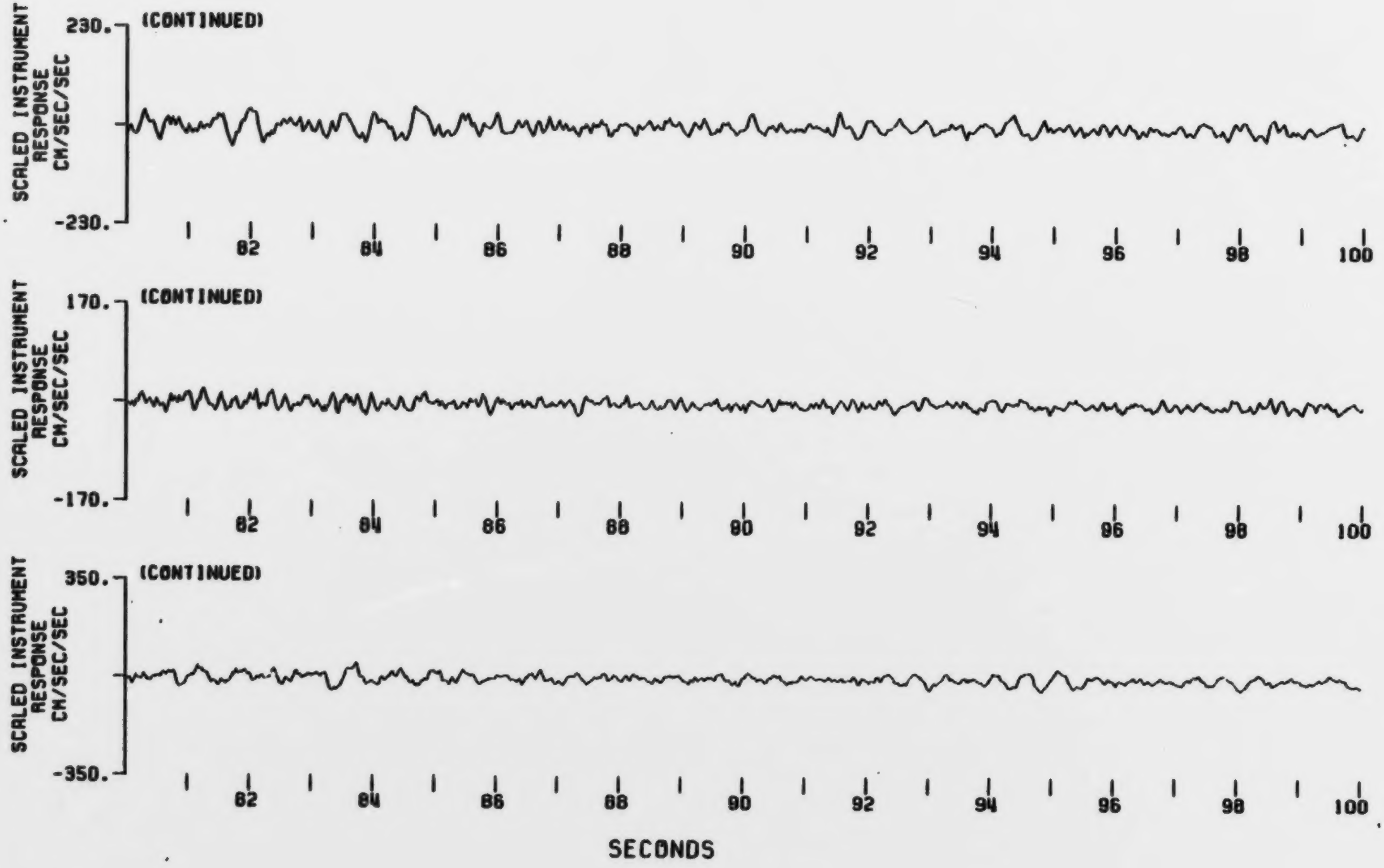
UNCORRECTED ACCELEROGRAM
VINA DEL MAR, D.I.C
290 DEGREES, UP, 200 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES (CM/SEC/SEC): -223.69 -167.69 349.51



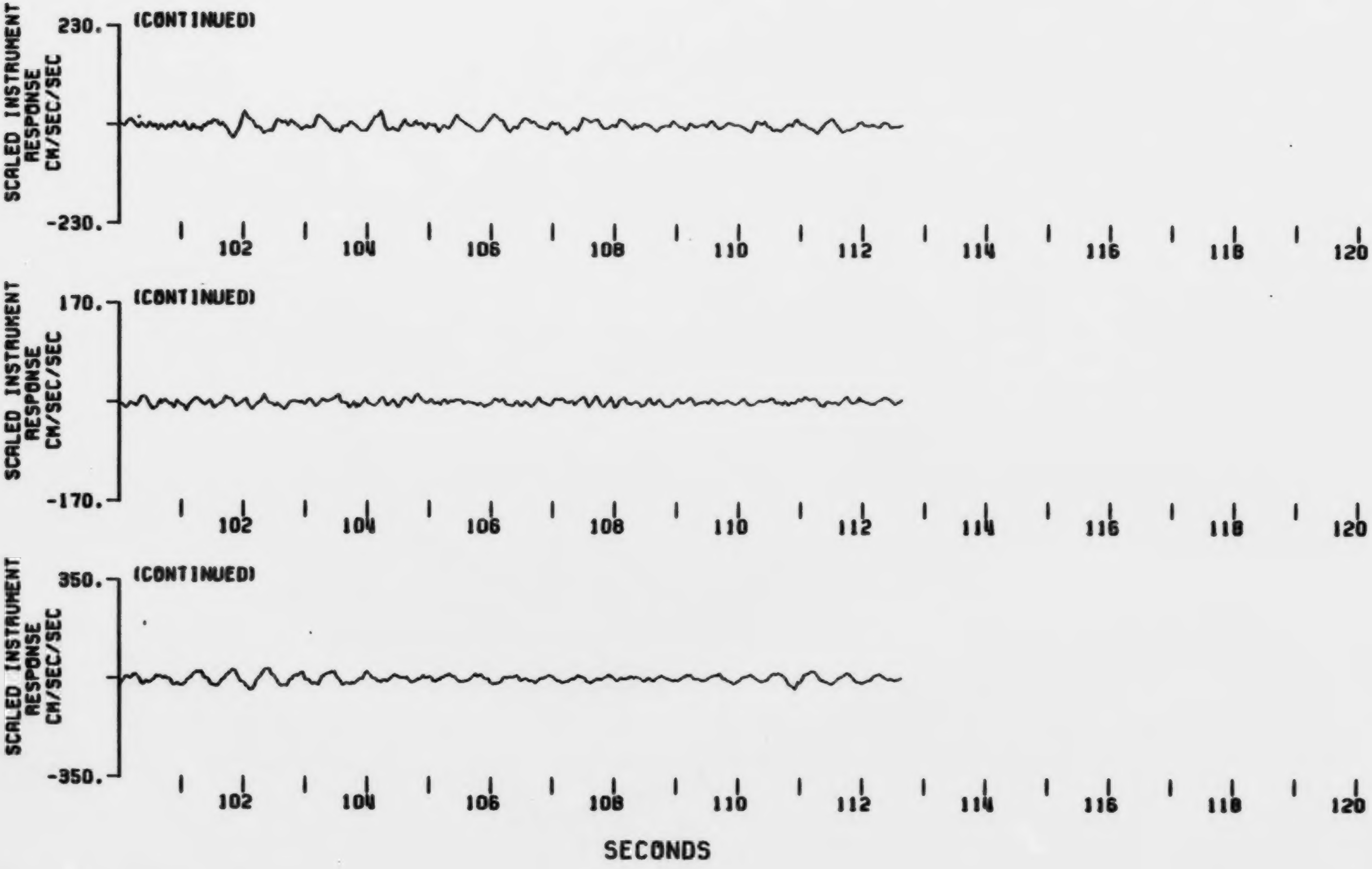
UNCORRECTED ACCELEROGRAM
VINA DEL MAR, D.I.C
290 DEGREES, UP, 200 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES (CM/SEC/SEC): -223.69 -167.69 349.51



UNCORRECTED ACCELEROGRAM
VINA DEL MAR, D.I.C
290 DEGREES, UP, 200 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES (CM/SEC/SEC): -223.69 -167.69 349.51



UNCORRECTED ACCELEROGRAM
VINA DEL MAR, D.I.C
290 DEGREES, UP, 200 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES (CM/SEC/SEC): -223.69 -167.69 349.51



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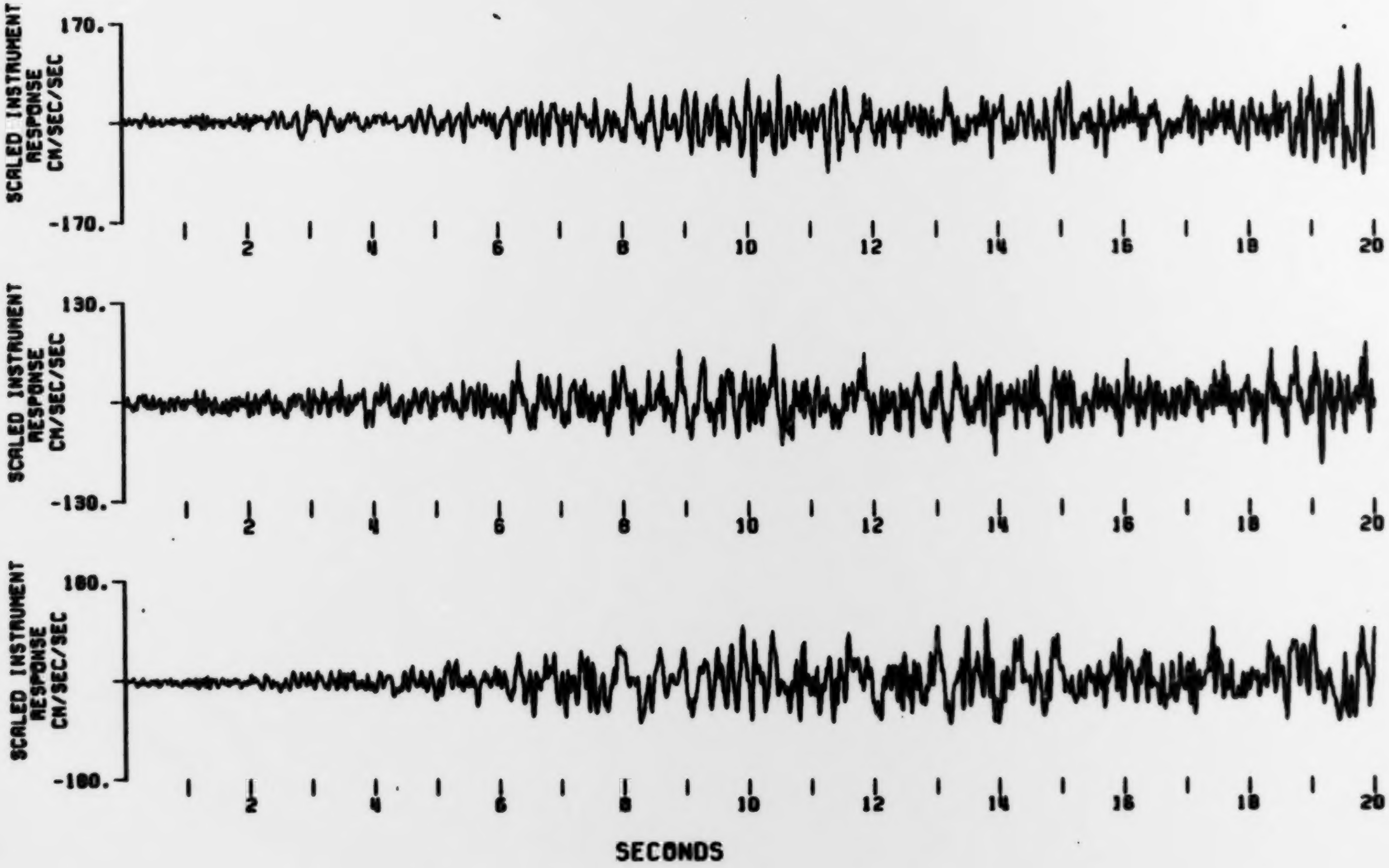
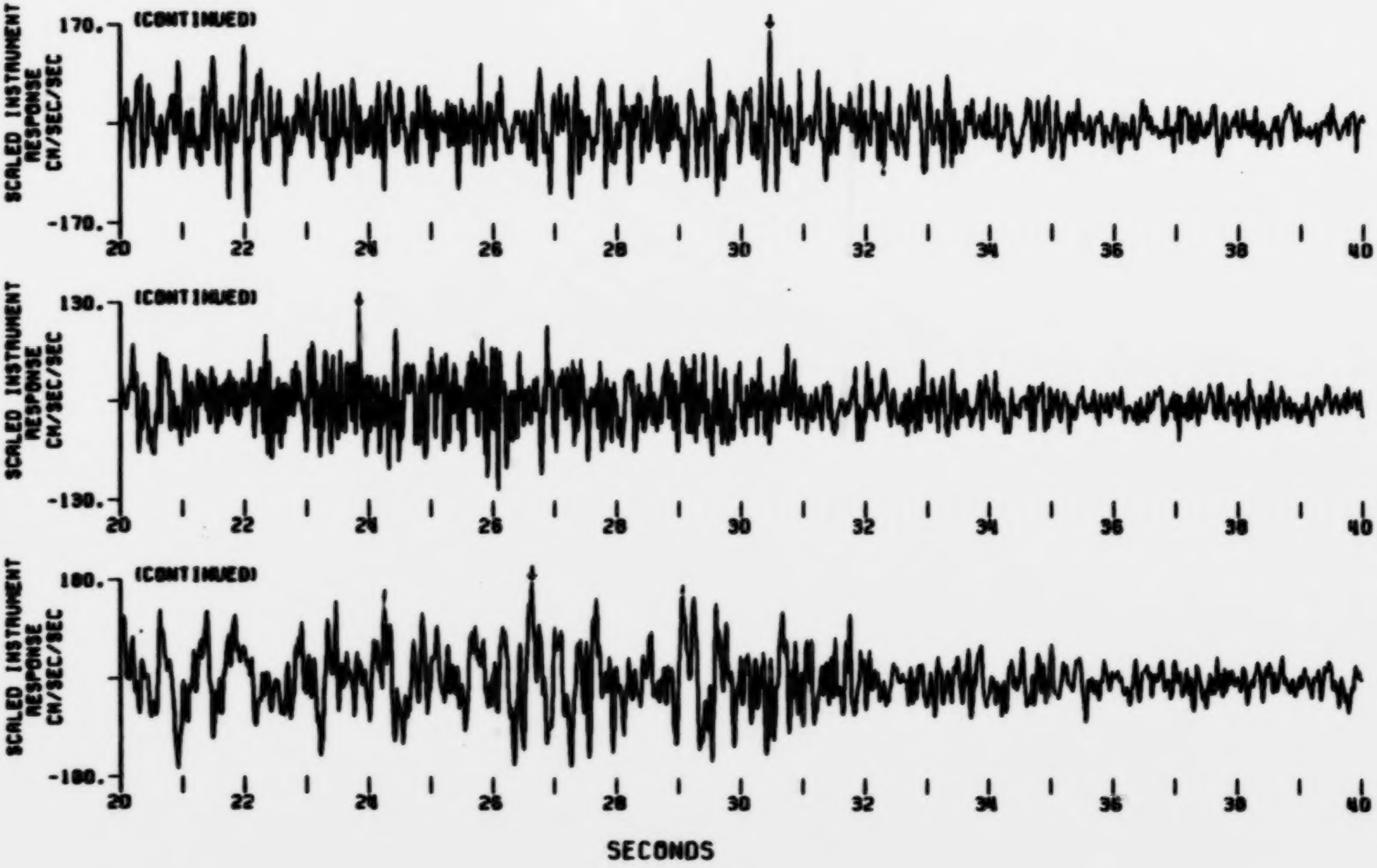
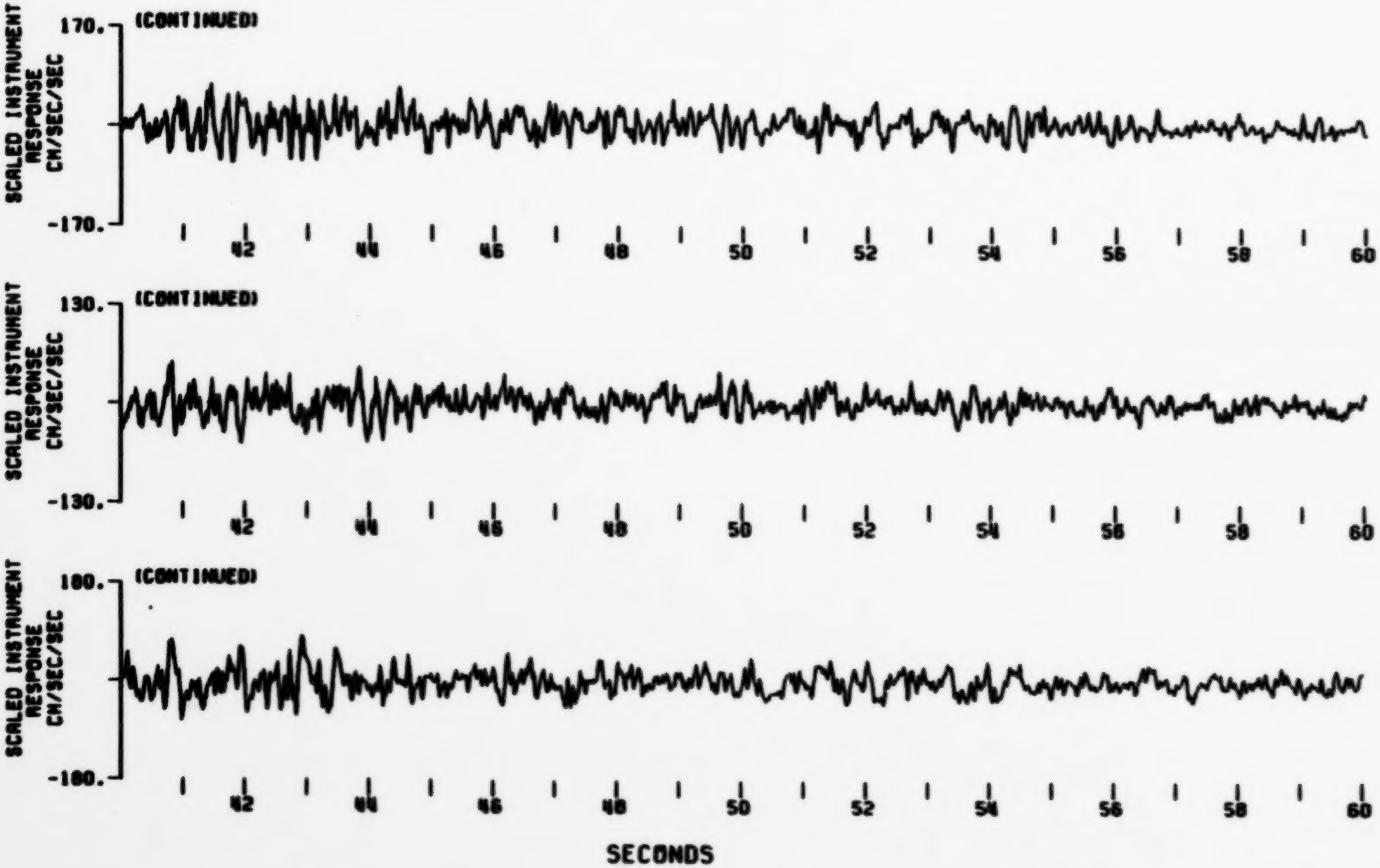
UNCORRECTED ACCELEROGRAM
VALPARAISO, U.F.S.M, D.I.C
160 DEGREES, UP, 070 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): 161.22 122.19 175.54



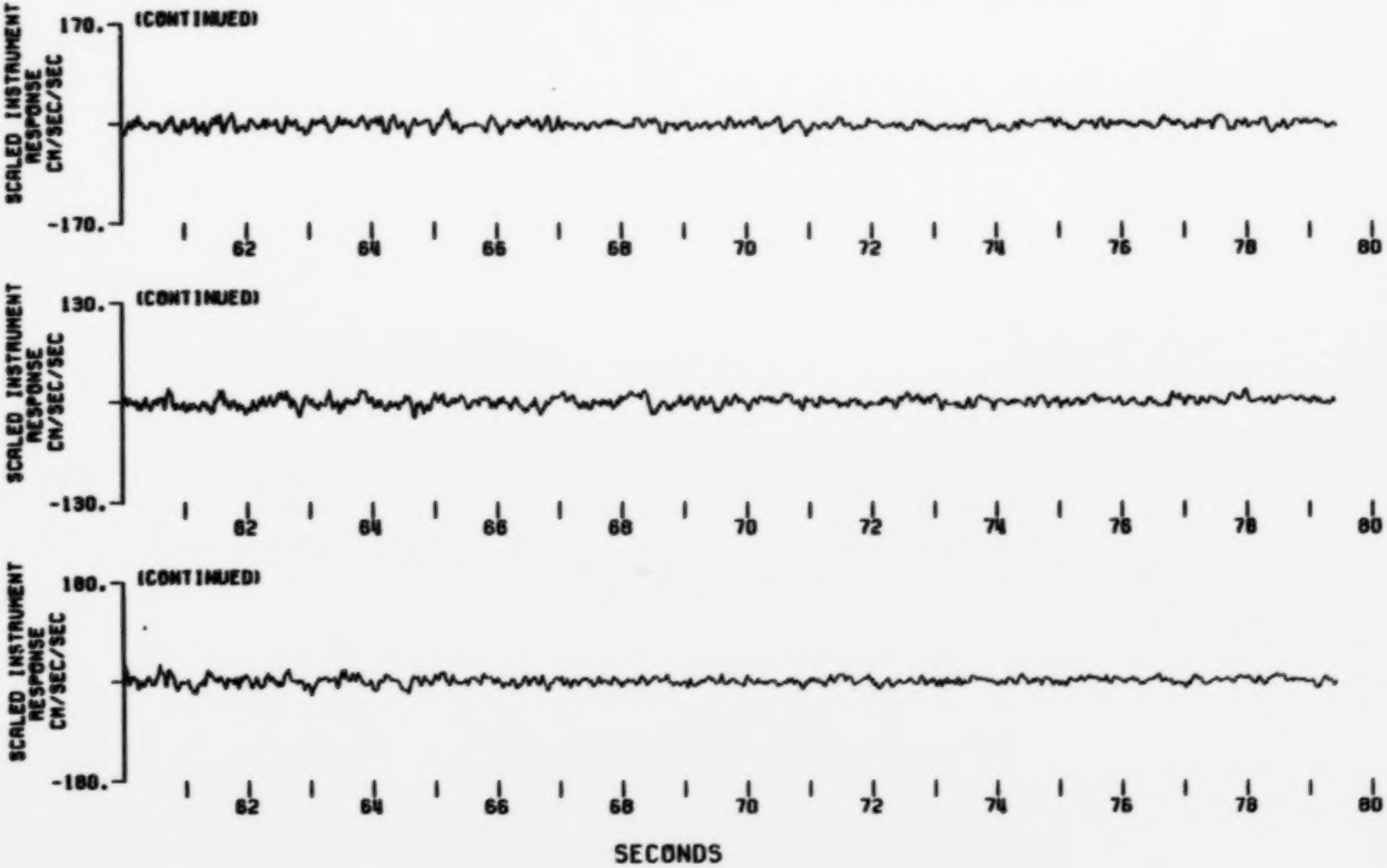
UNCORRECTED ACCELEROGRAM
VALPARAISO, U.F.S.M, D.I.C
160 DEGREES, UP, 070 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): 161.22 122.19 175.54



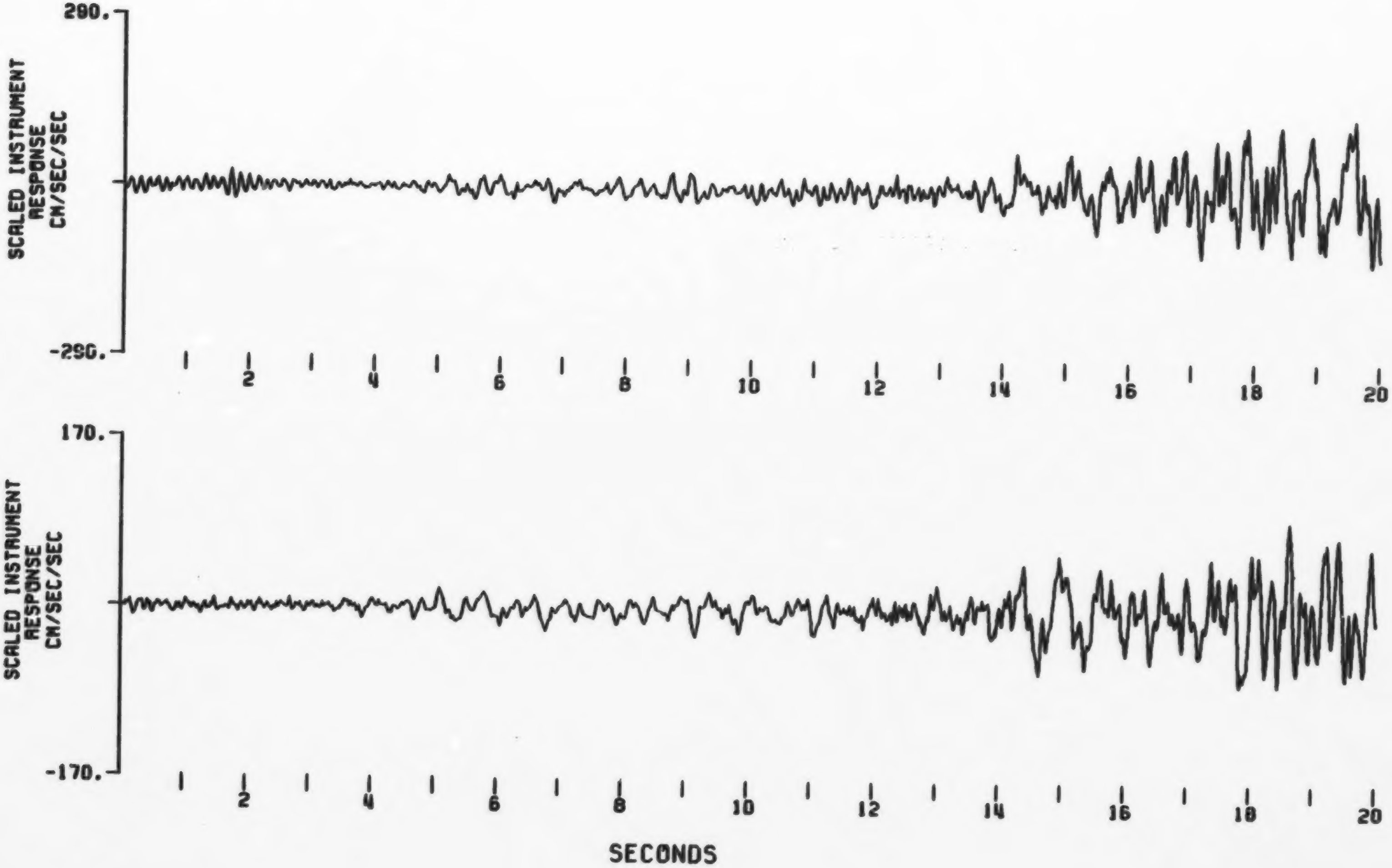
UNCORRECTED ACCELEROGRAM
VALPARAISO, U.F.S.M. D.I.C
160 DEGREES, UP, 070 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES (CM/SEC/SEC): 161.22 122.19 175.54



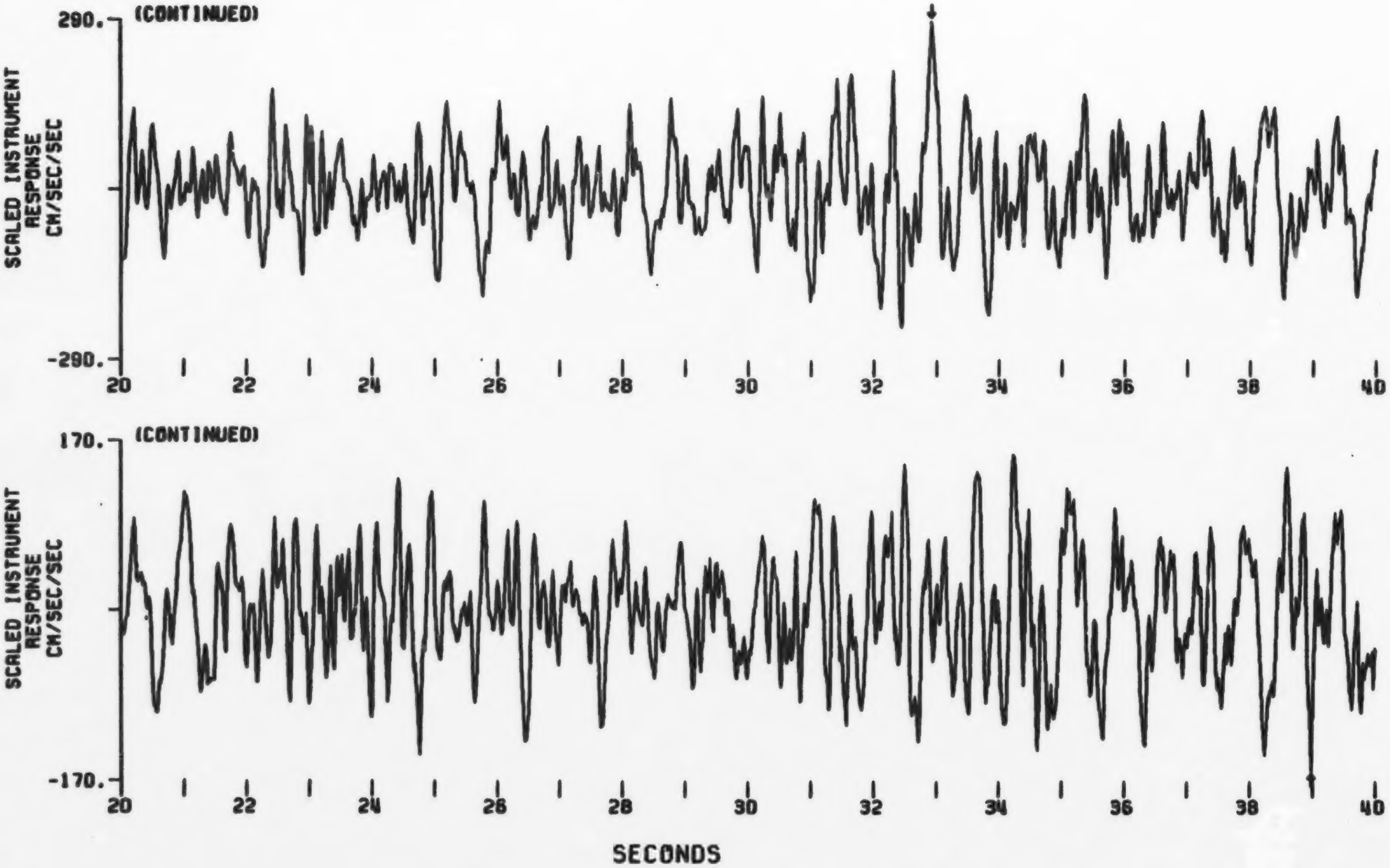
UNCORRECTED ACCELEROGRAM
VALPARAISO, U.F.S.M, D.I.C
160 DEGREES, UP, 070 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): 161.22 122.19 175.54



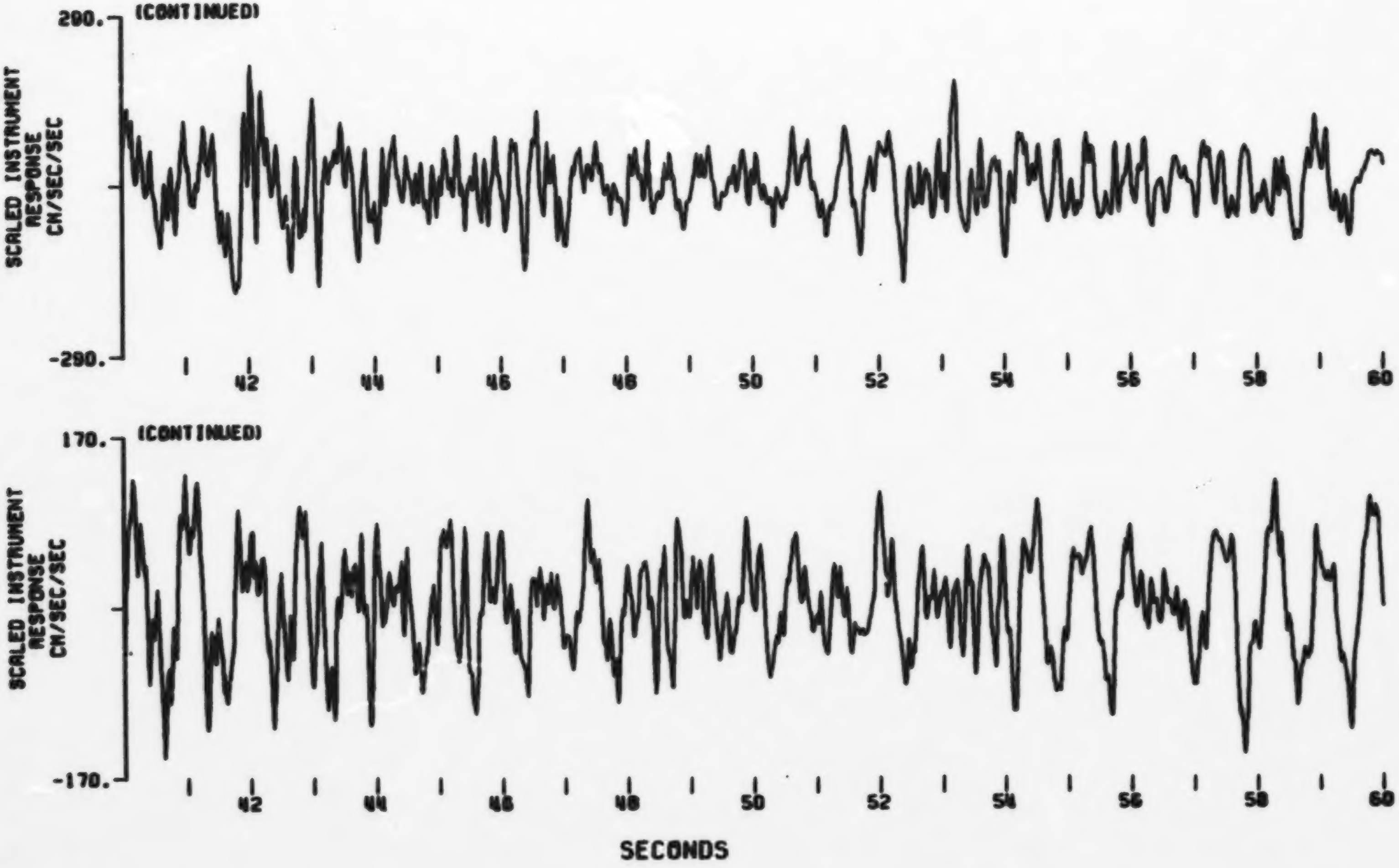
UNCORRECTED ACCELEROGRAM
VALPARAISO EL ALMENDRAL, D.I.C
050 DEGREES, 140 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): 287.73 -160.24



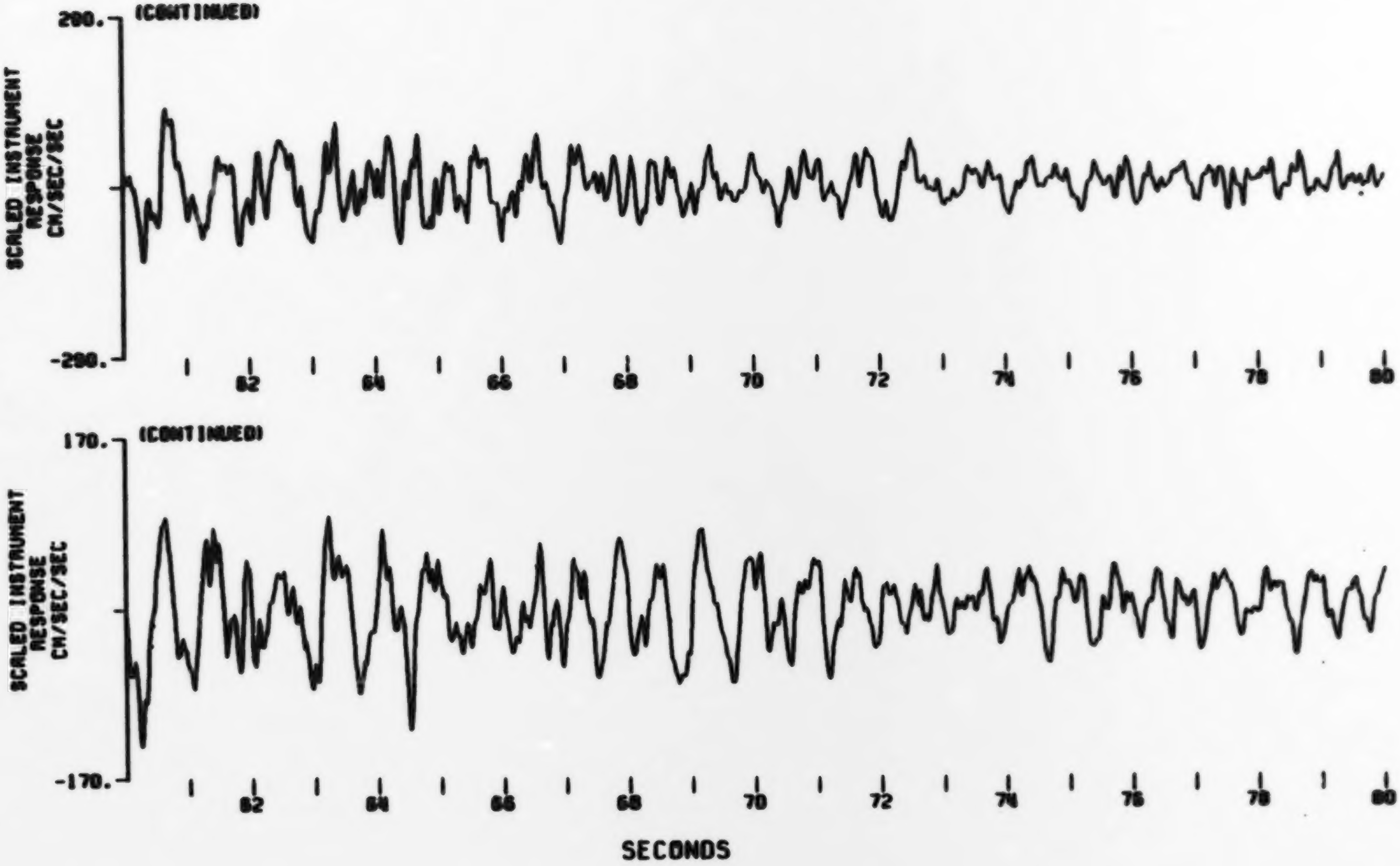
UNCORRECTED ACCELEROGRAM
VALPARAISO EL ALMENDRAL, D.I.C
050 DEGREES, 140 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): 287.73 -160.24



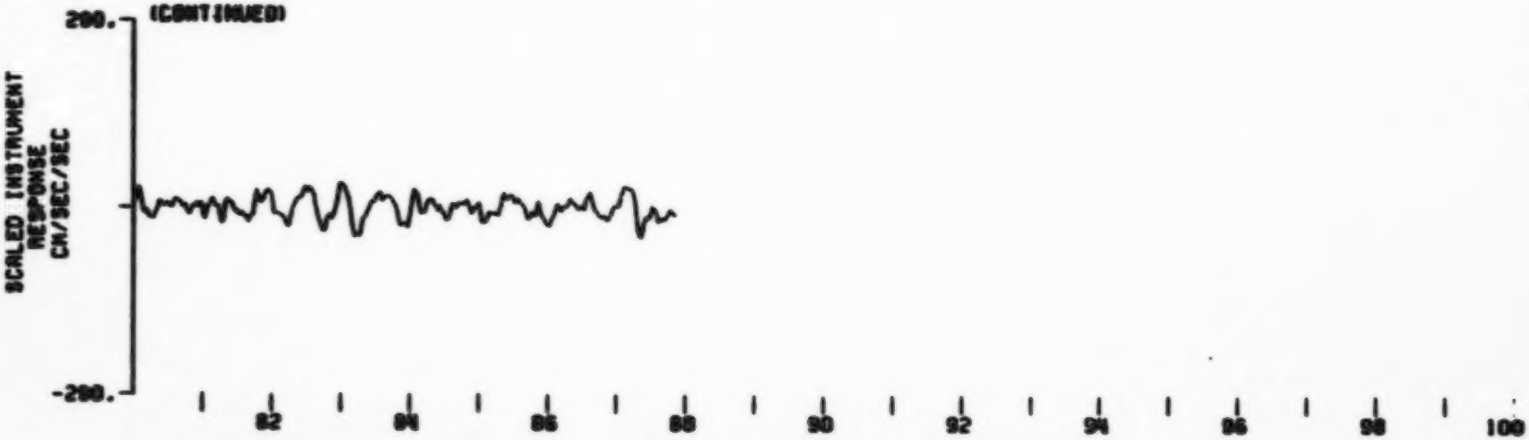
UNCORRECTED ACCELEROGRAM
VALPARAISO EL ALMENDRAL, D.I.C
050 DEGREES, 140 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): 287.73 -160.24

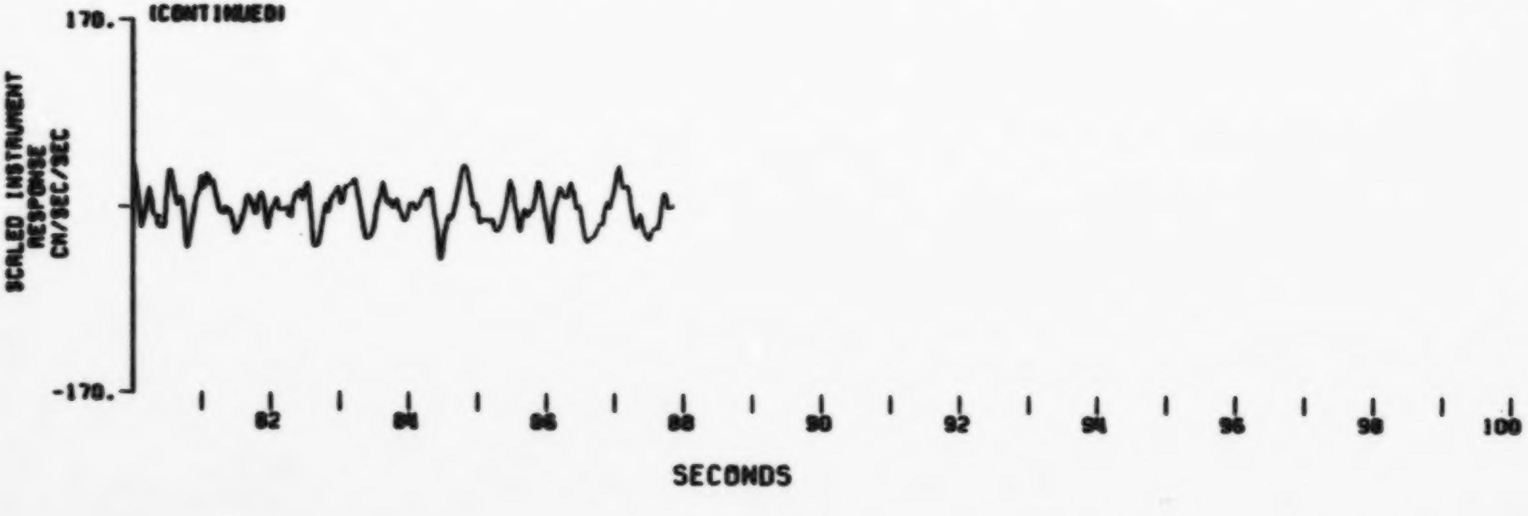


UNCORRECTED ACCELEROGRAM
VALPARAISO EL ALMENDRAL, D.I.C
050 DEGREES, 140 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): 287.73 -160.24

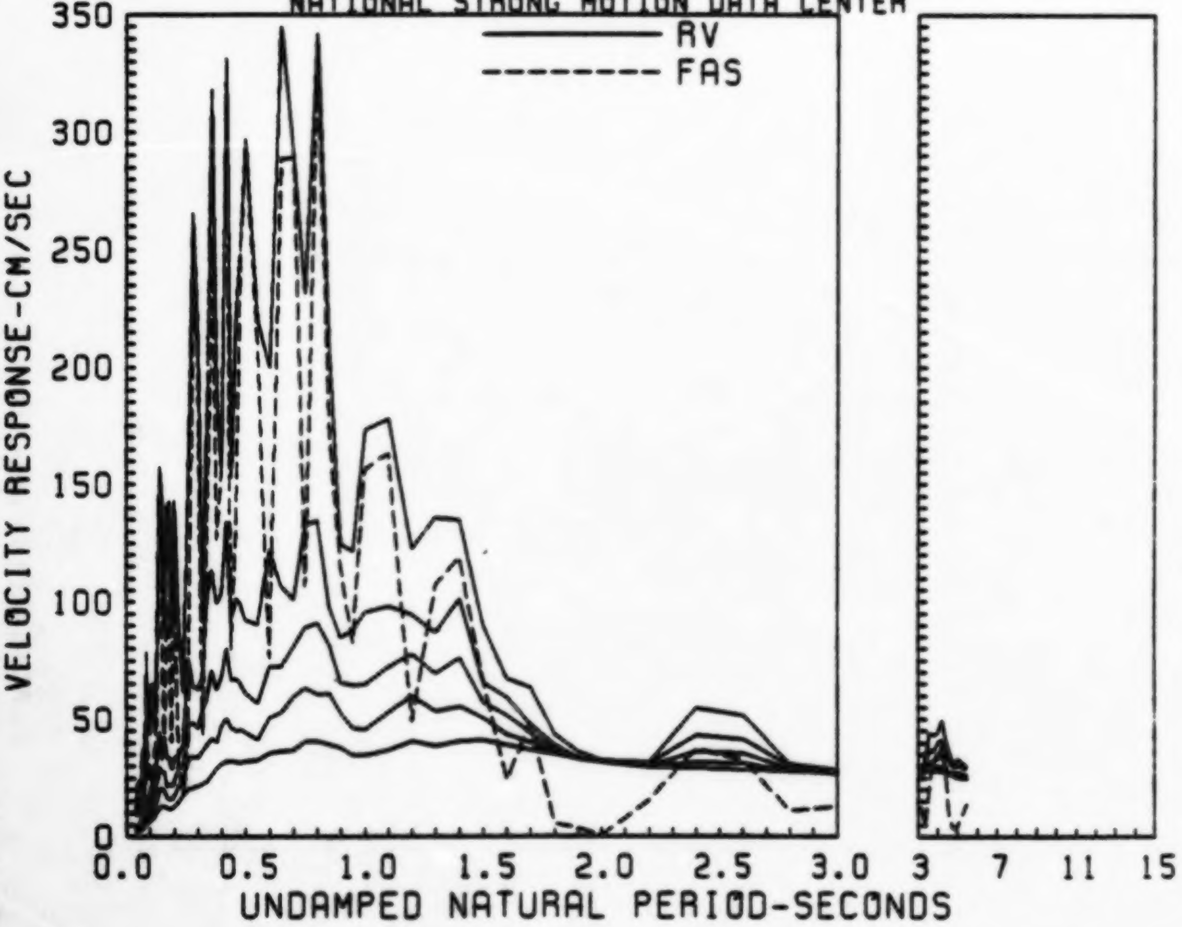


UNCORRECTED ACCELEROGRAM
VALPARAISO EL ALMENDRAL, D.I.C
050 DEGREES, 140 DEGREES
EARTHQUAKE OF MARCH 3, 1985
PEAK VALUES(CM/SEC/SEC): 287.73 -160.24

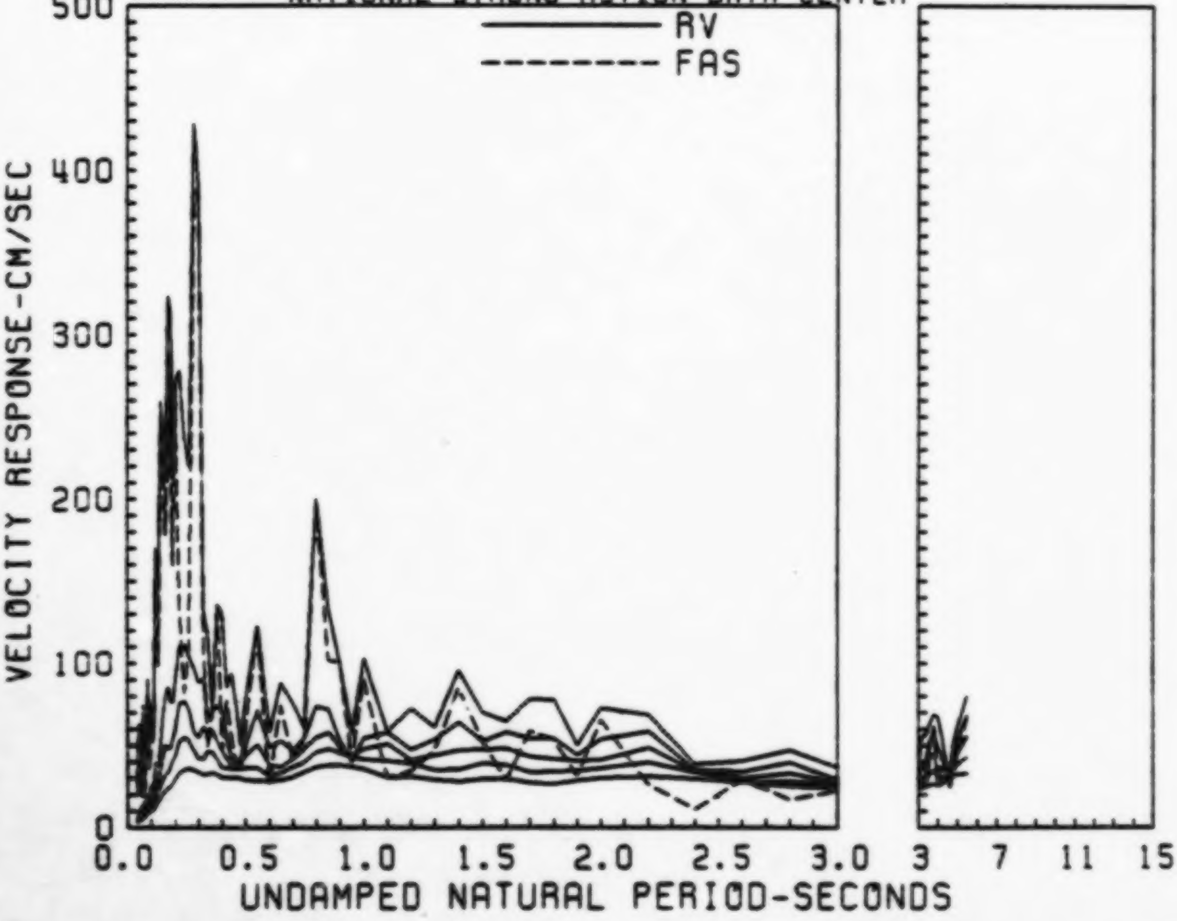




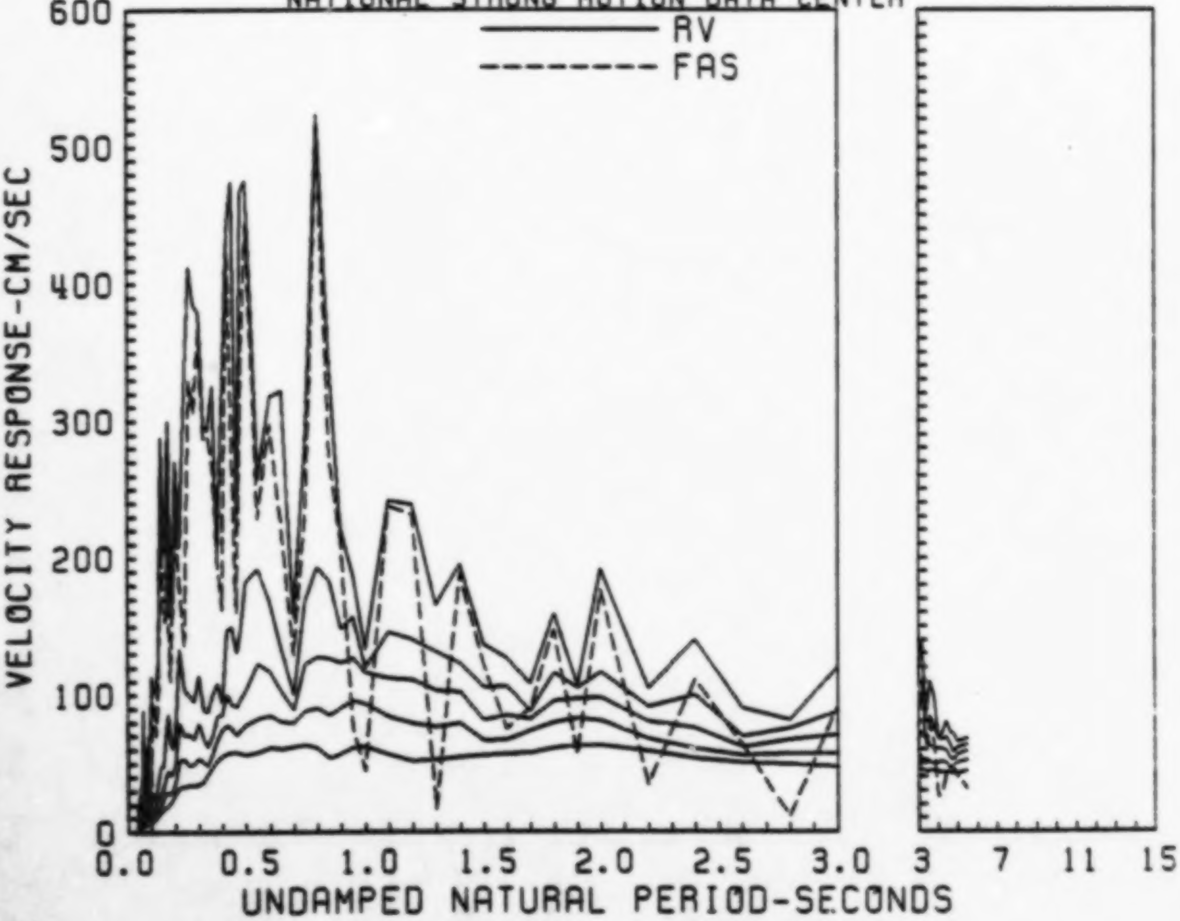
RELATIVE VELOCITY RESPONSE SPECTRUM
LLOLLEO, D.I.C. 3/03/85, 2247:07UTC 100
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER

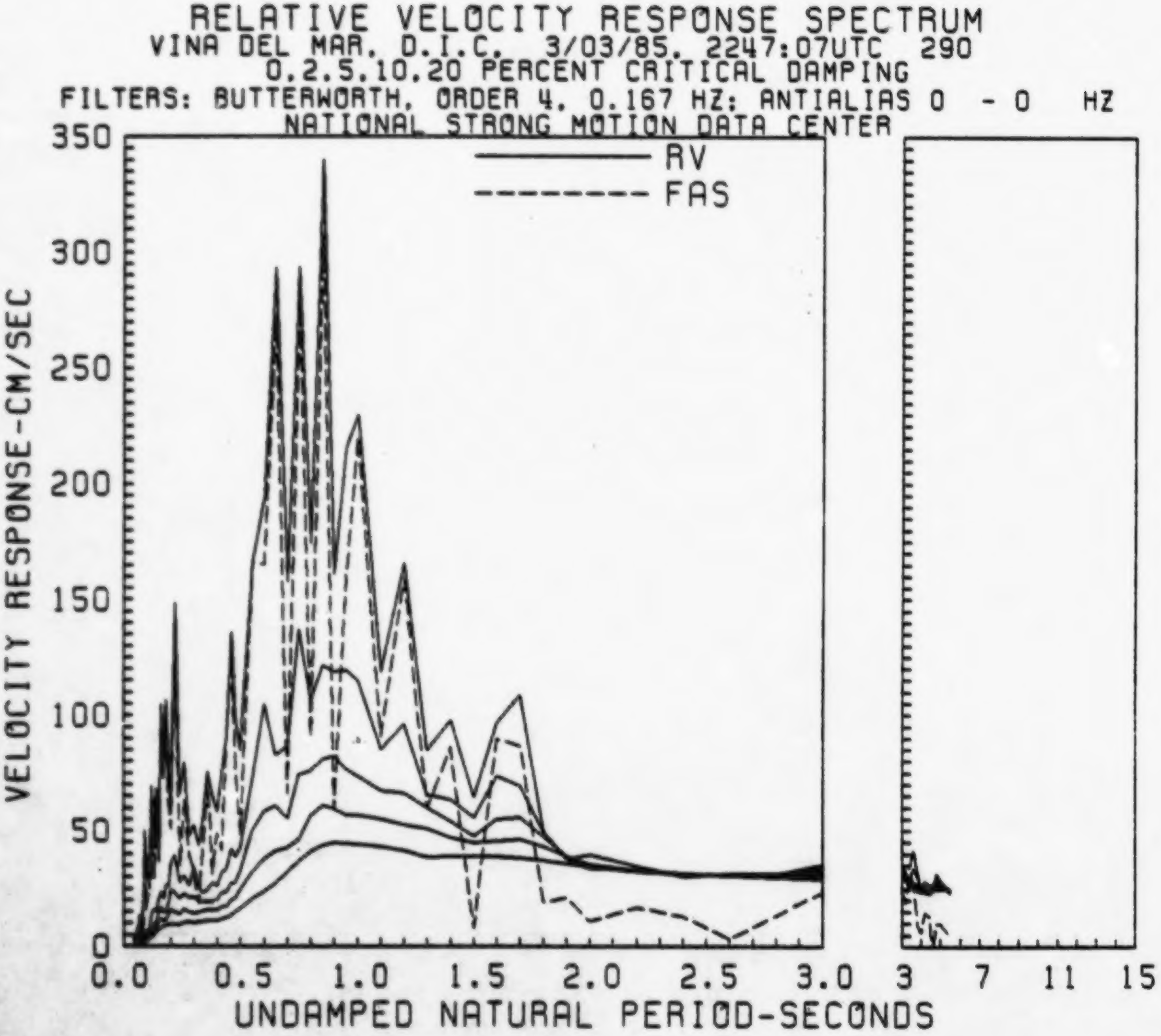


RELATIVE VELOCITY RESPONSE SPECTRUM
LLOLLEO, D.I.C., 3/03/85, 2247:07UTC UP
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER

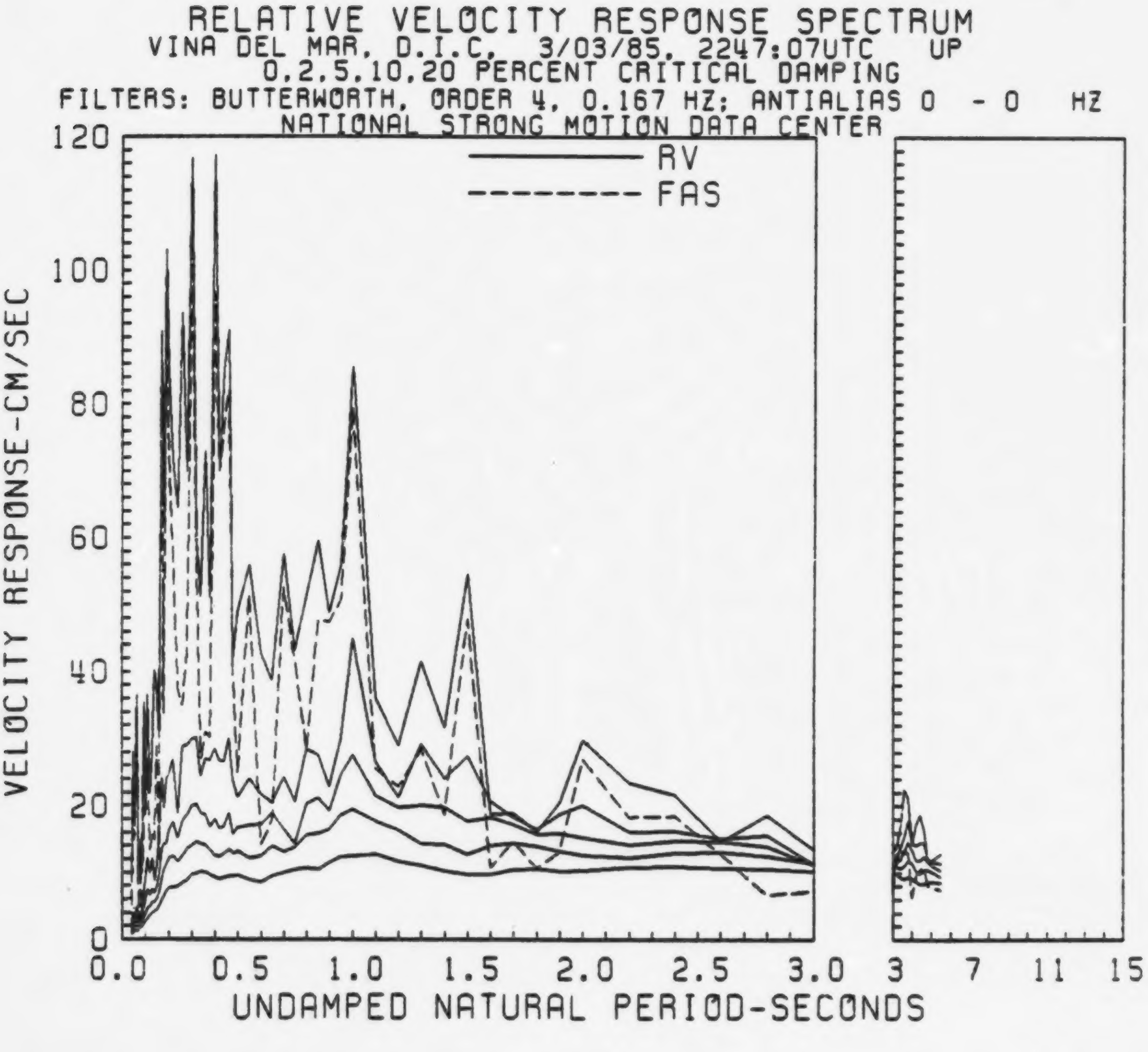


RELATIVE VELOCITY RESPONSE SPECTRUM
LLOLLEO, D.I.C. 3/03/85, 2247:07UTC 10
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER

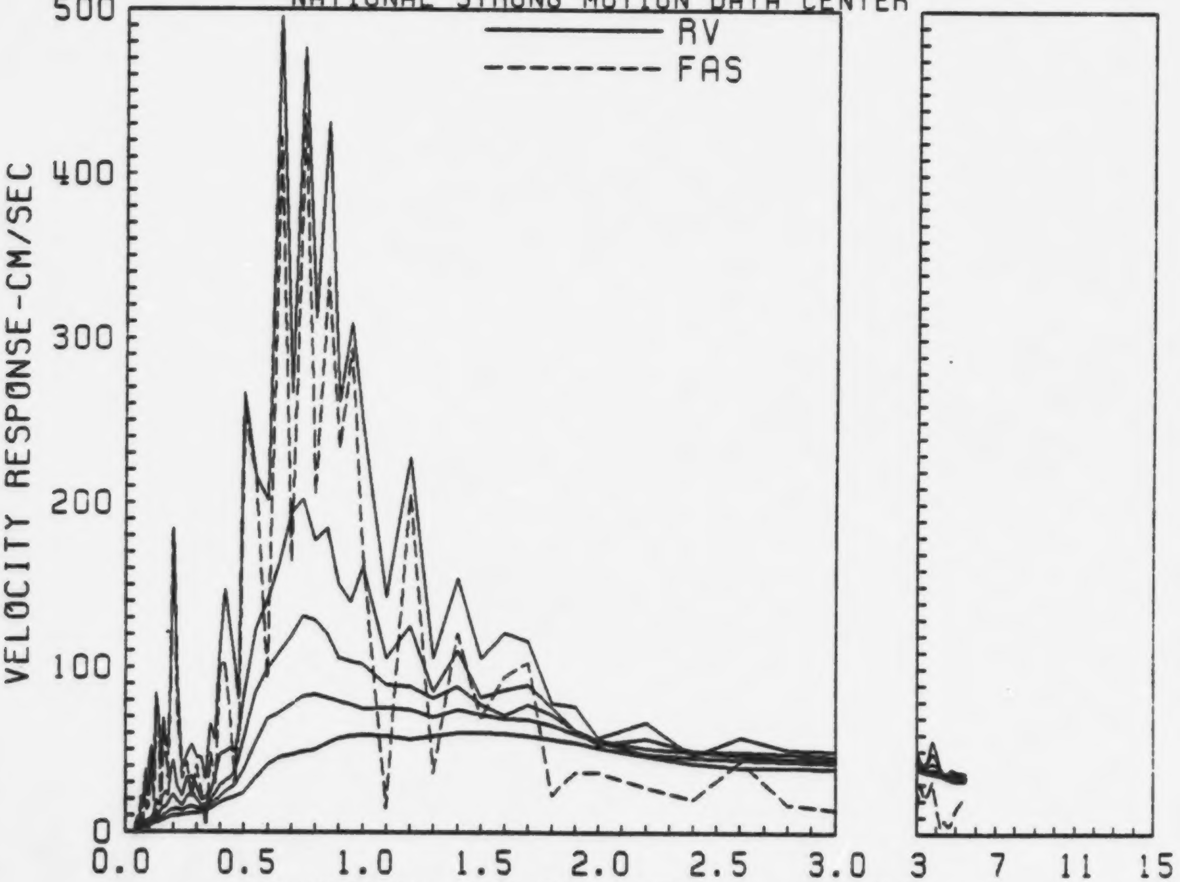




RELATIVE VELOCITY RESPONSE SPECTRUM
VINA DEL MAR, D.I.C. 3/03/85, 2247:07UTC 290
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ: ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER

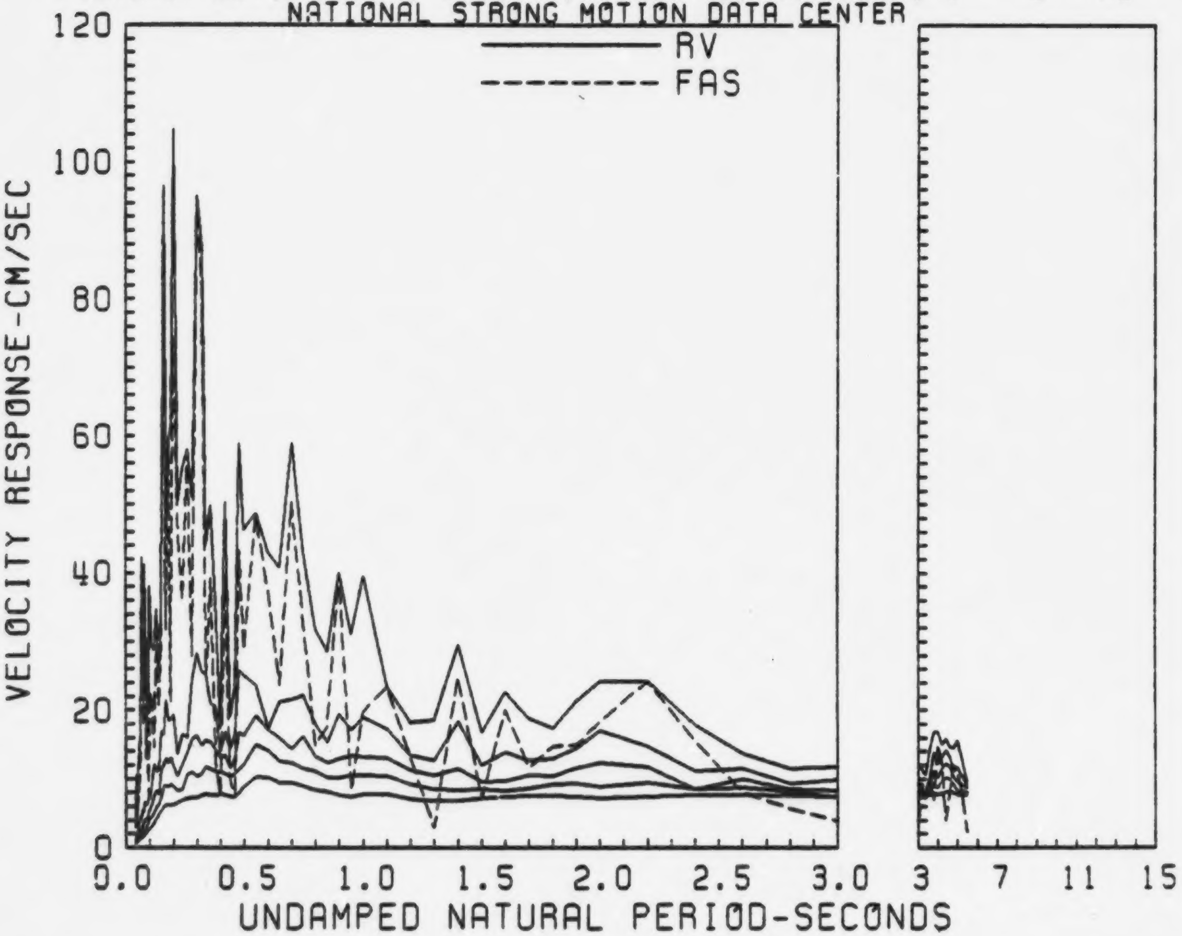


RELATIVE VELOCITY RESPONSE SPECTRUM
VINA DEL MAR, D.I.C., 3/03/85, 2247:07UTC UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER



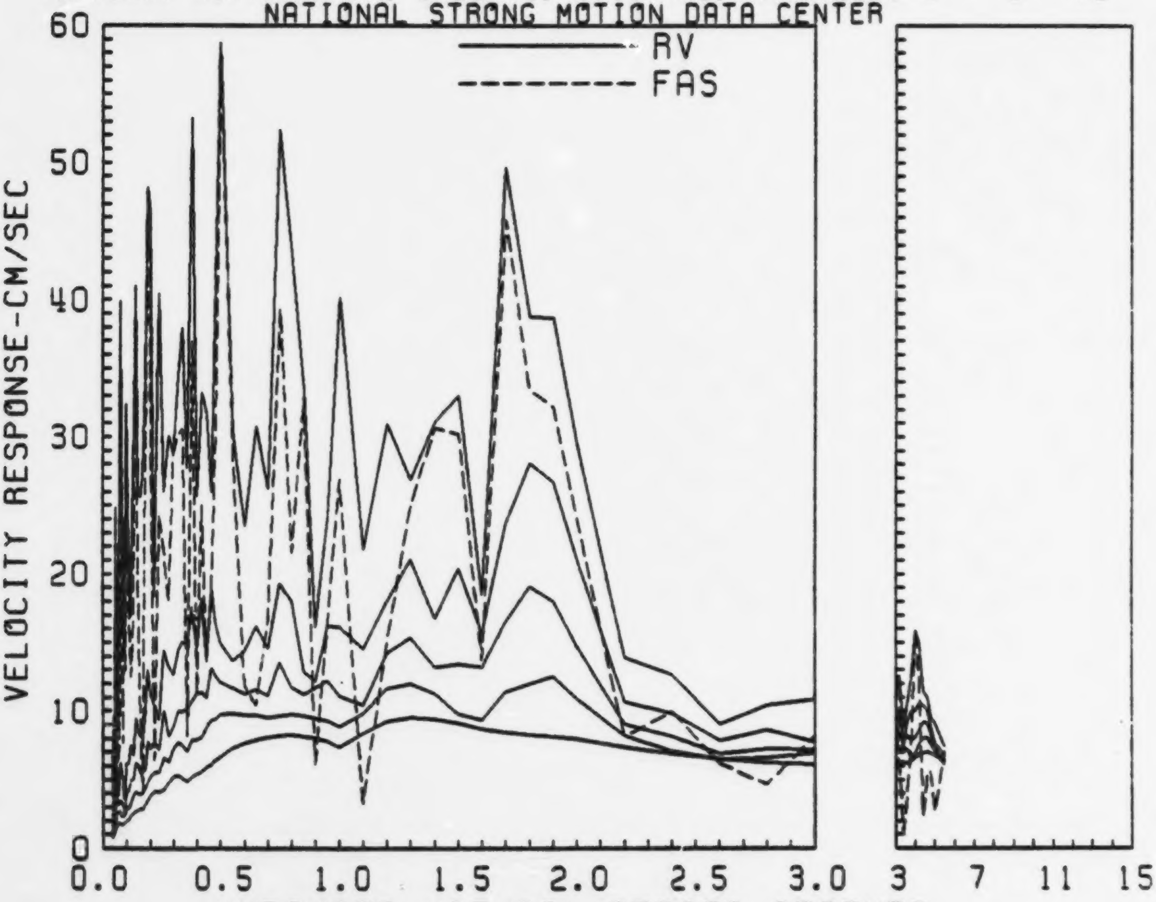
RELATIVE VELOCITY RESPONSE SPECTRUM
VINA DEL MAR, D.I.C. 3/03/85, 2247:07UTC 200
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER

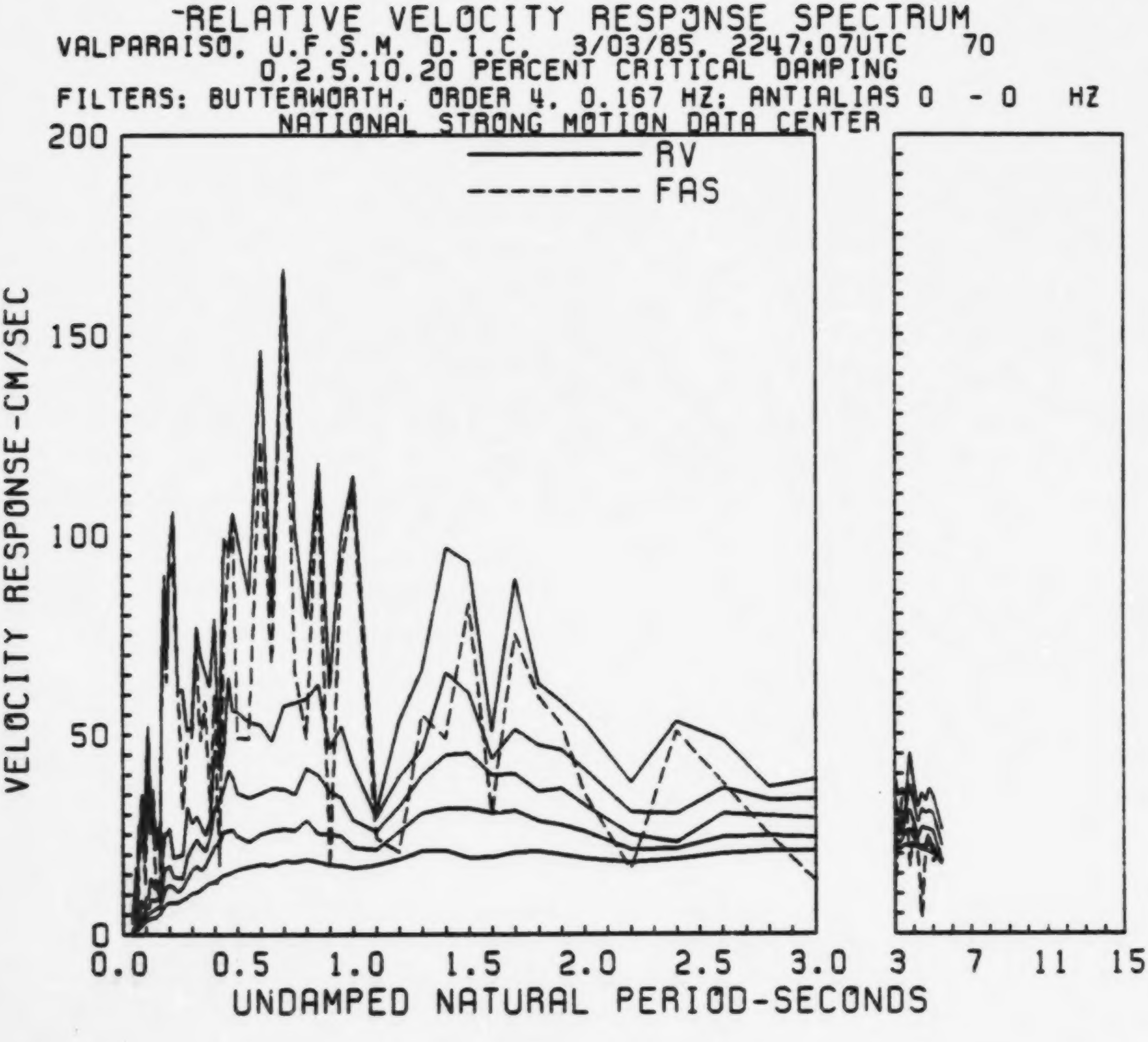
RELATIVE VELOCITY RESPONSE SPECTRUM
VALPARAISO, U.F.S.M, D.I.C. 3/03/85, 2247:07UTC 160
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER



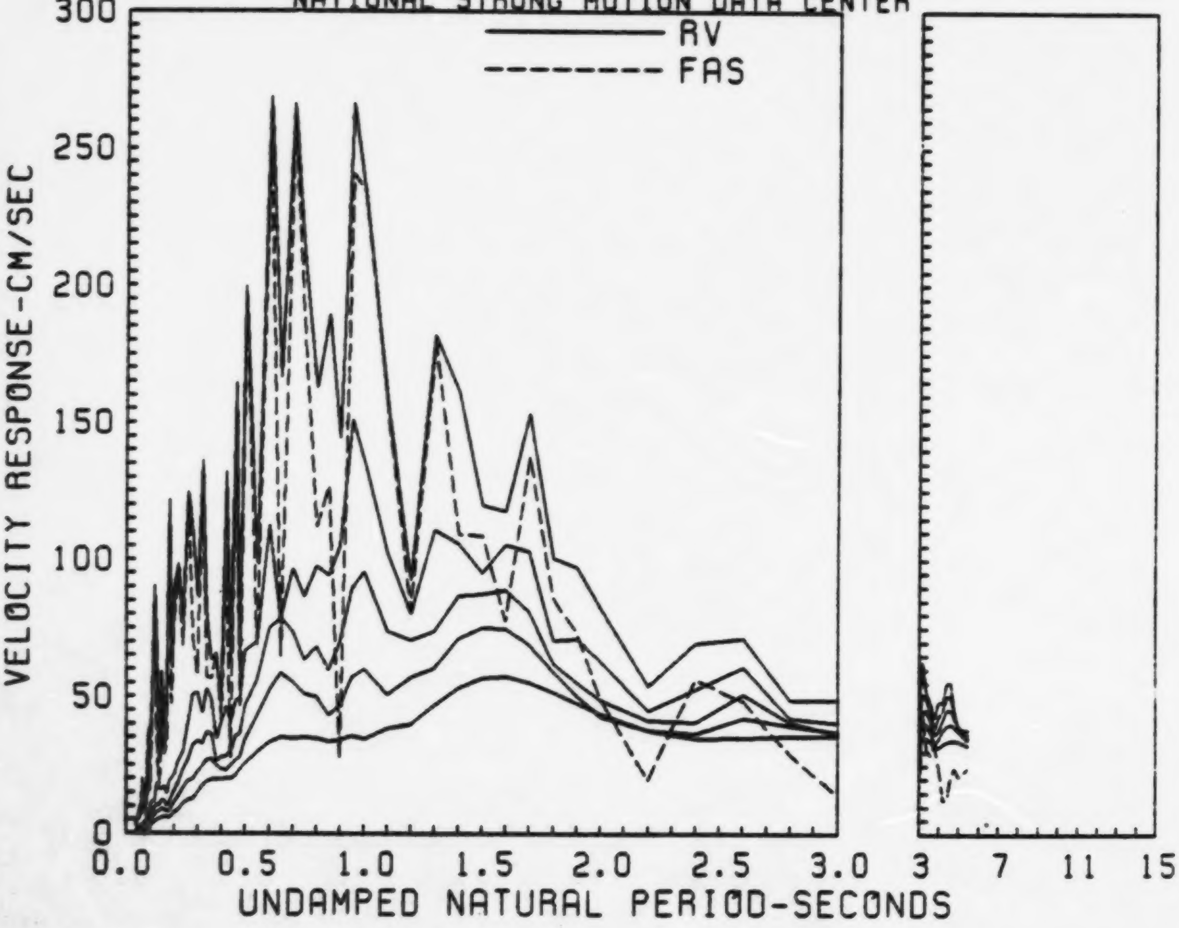
RELATIVE VELOCITY RESPONSE SPECTRUM

VALPARAISO, U.F.S.M, D.I.C. 3/03/85, 2247:07UTC UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER

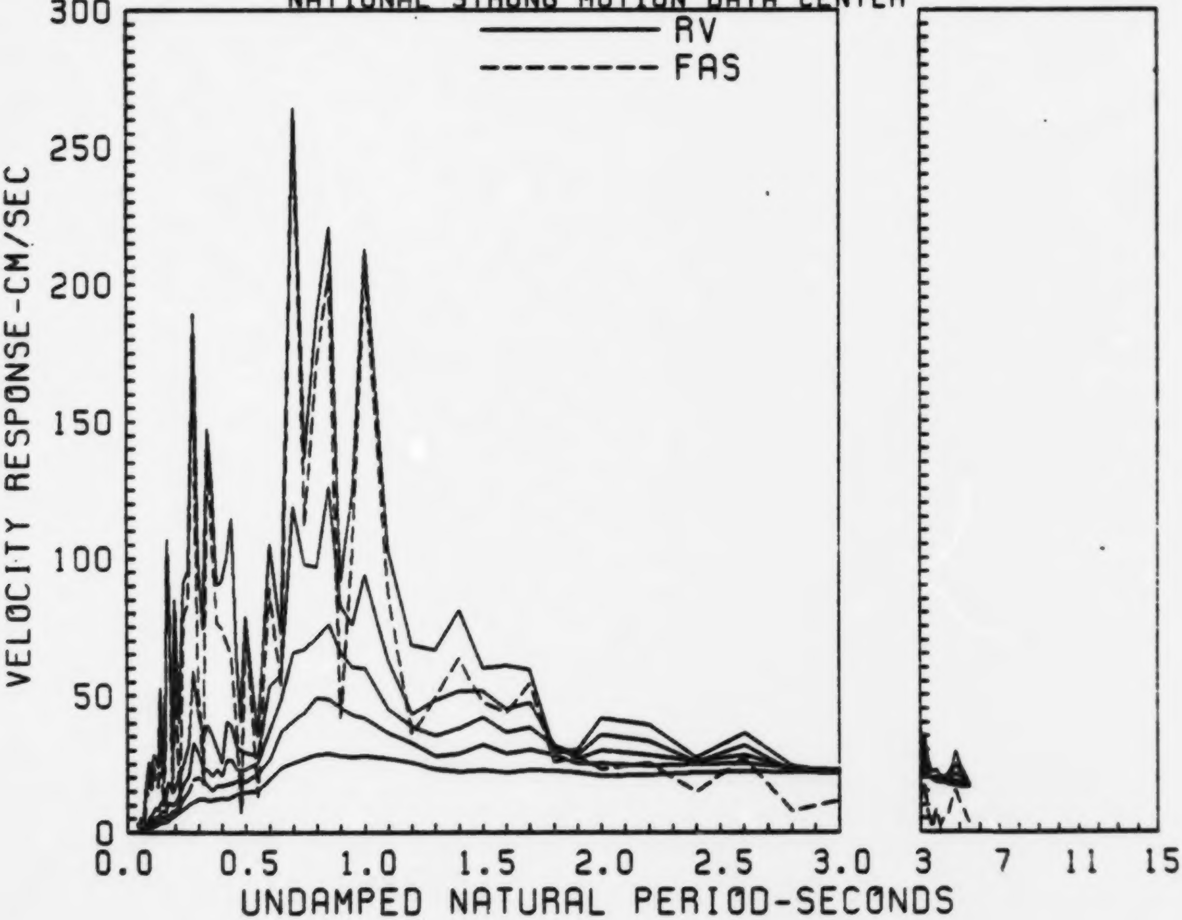



RELATIVE VELOCITY RESPONSE SPECTRUM
VALPARAISO, U.F.S.M. D.I.C., 3/03/85, 2247:07UTC 70
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
200
150
100
50
0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15
UNDAMPED NATURAL PERIOD-SECONDS

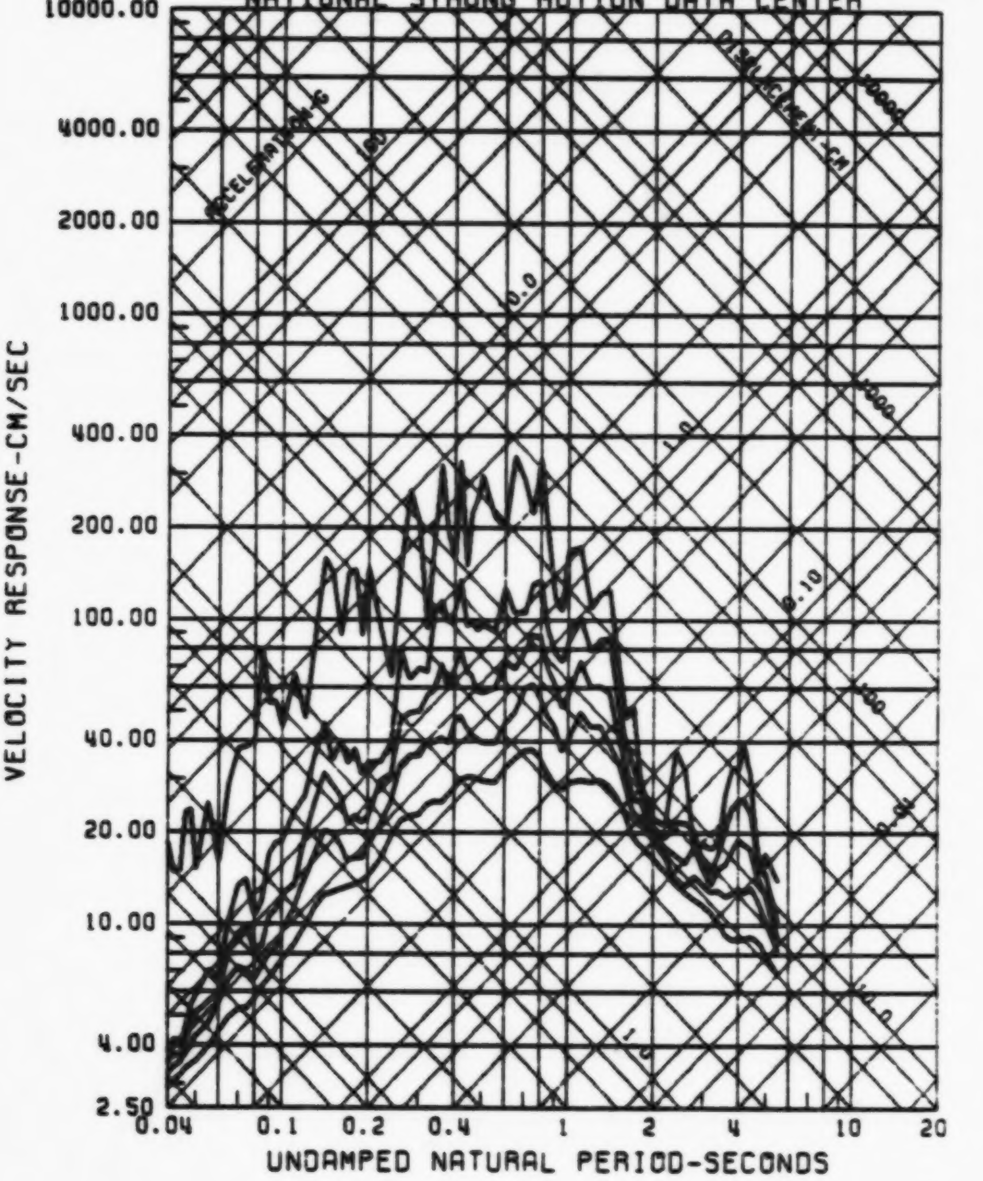
RELATIVE VELOCITY RESPONSE SPECTRUM
VALPARAISO EL ALMENDRAL, D.I.C. 3/03/85, 2247:07UTC 50
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER

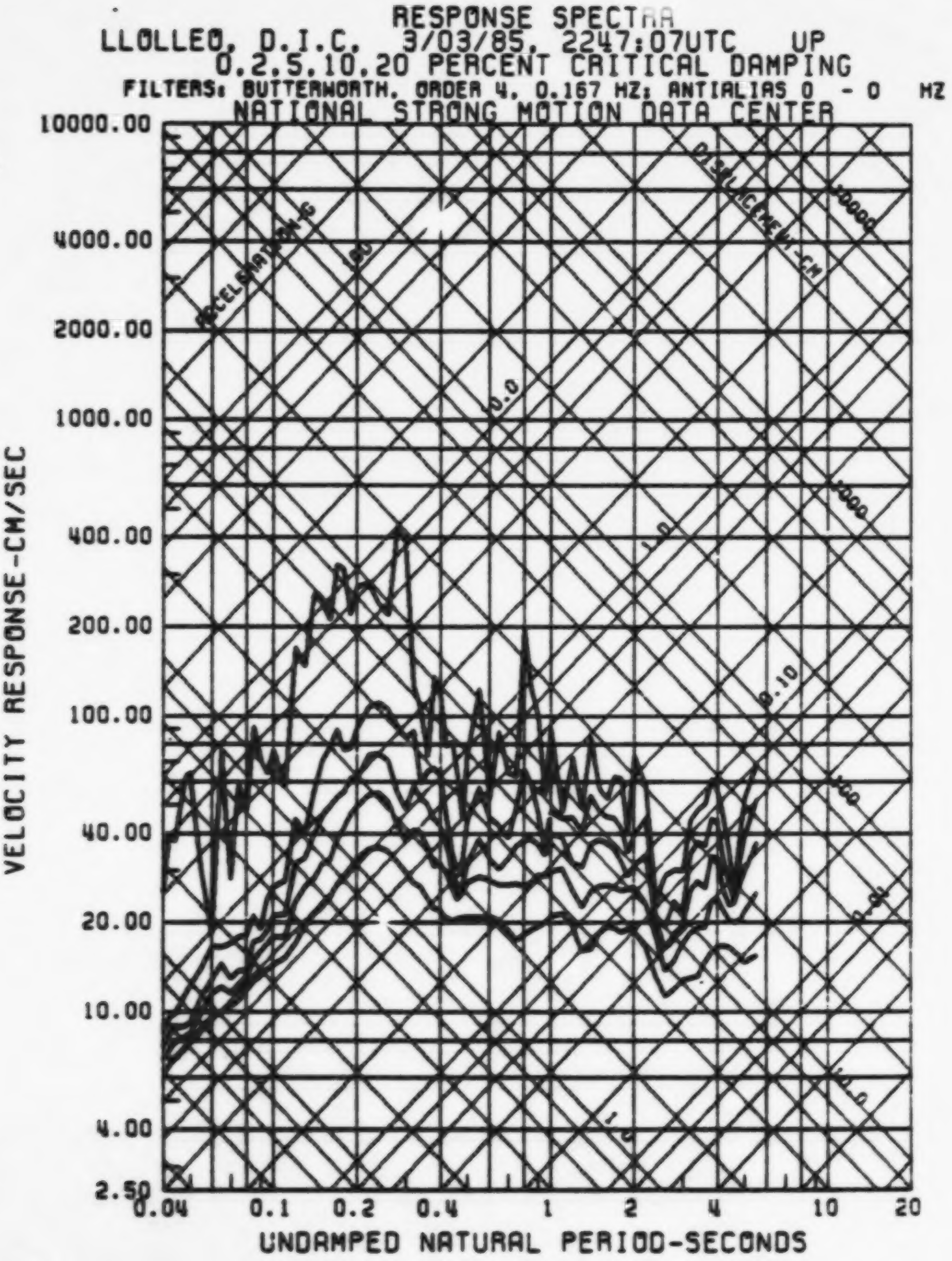


RELATIVE VELOCITY RESPONSE SPECTRUM
VALPARAISO EL ALMENDRAL, D.I.C. 3/03/85, 2247:07UTC 140
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER

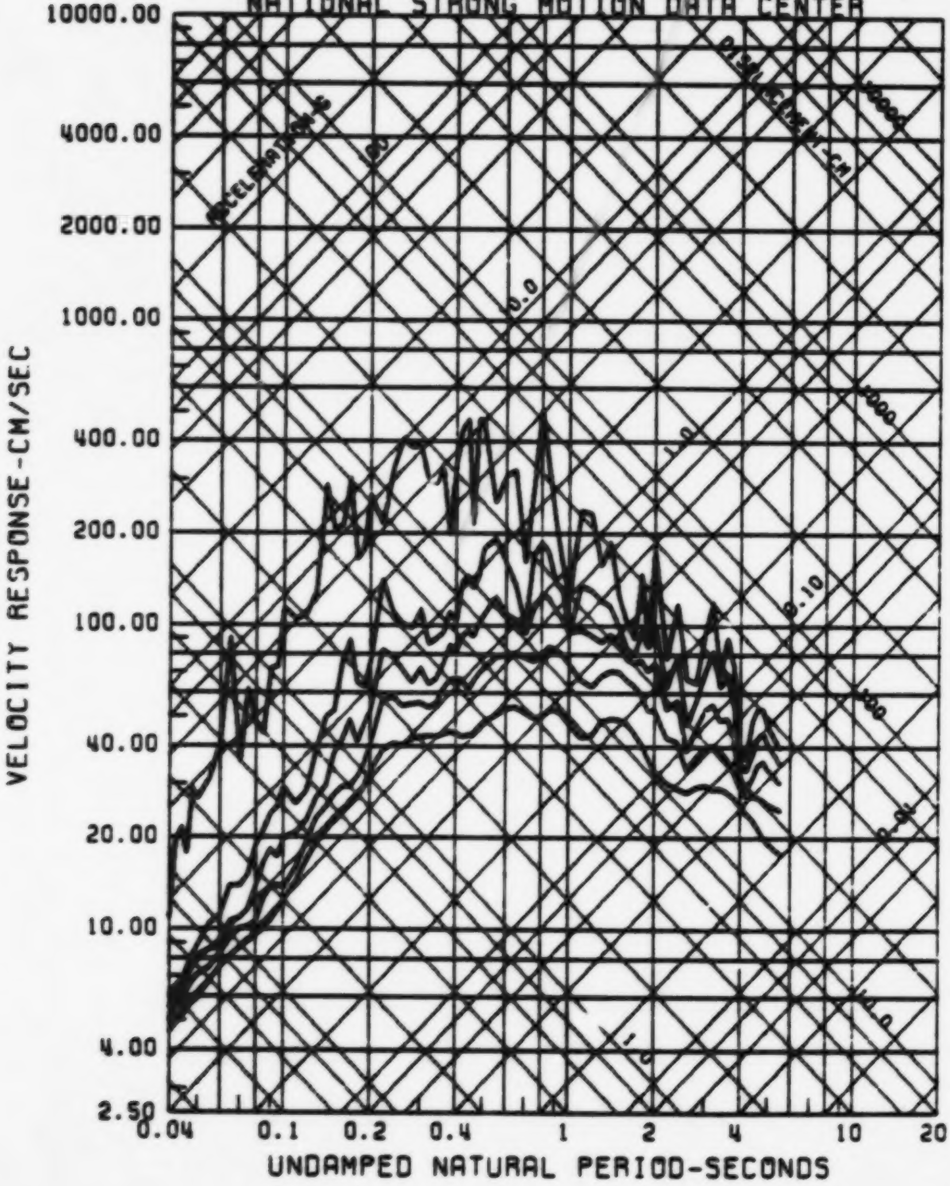


RESPONSE SPECTRA
LLOLLEO, D.I.C., 3/03/85, 2247:07UTC 100
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER

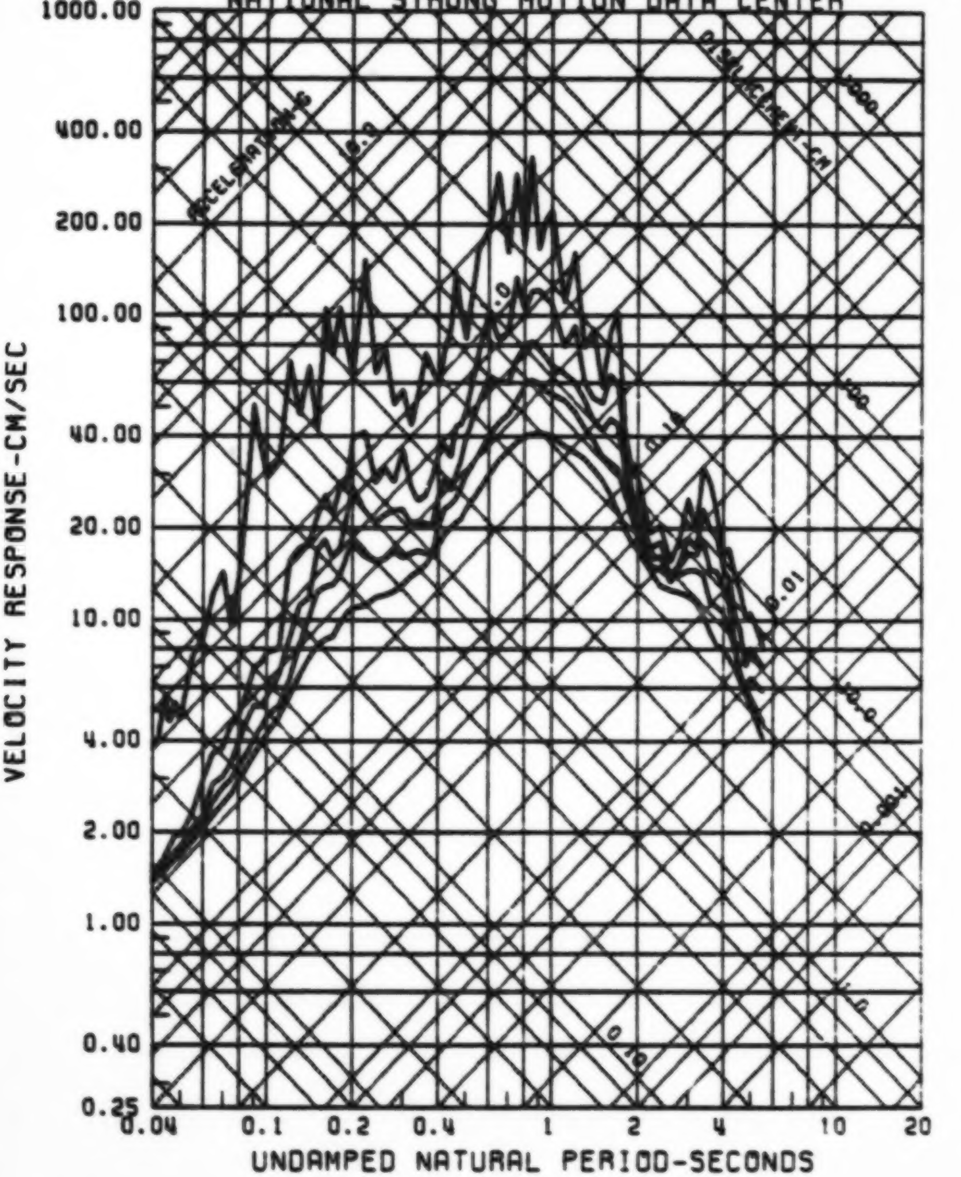



RESPONSE SPECTRA
LLOLLEO, D.I.C.   3/03/85, 2247:07UTC   UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
10000.00
4000.00
2000.00
1000.00
400.00
200.00
100.00
40.00
20.00
10.00
4.00
2.50
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
100
10.0
1.0
0.10
DISPLACEMENT-CM
10000
1000
100
10.0
1.0

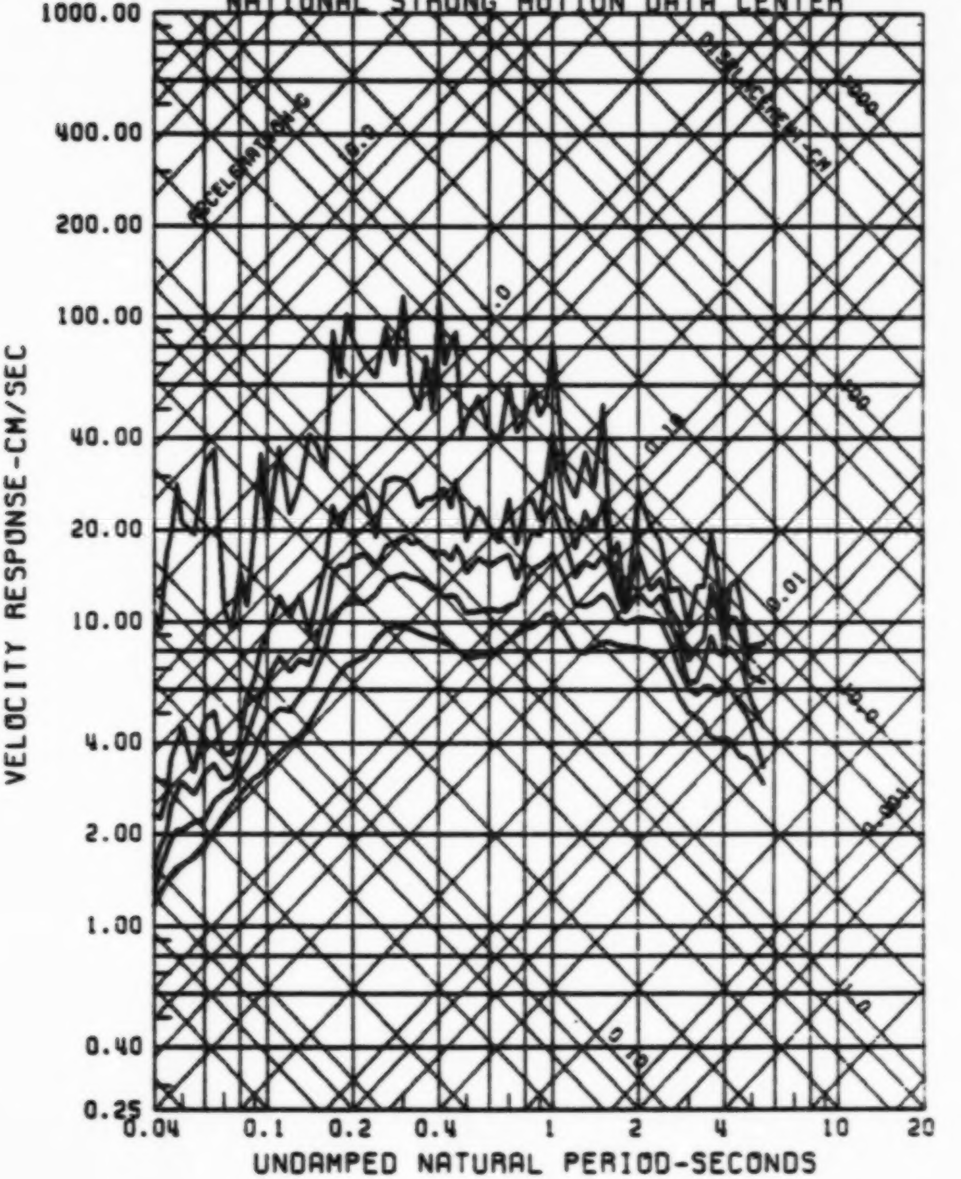
RESPONSE SPECTRA
LLOLLEO, D.I.C. 3/03/85, 2247:07UTC 10
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4. 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER



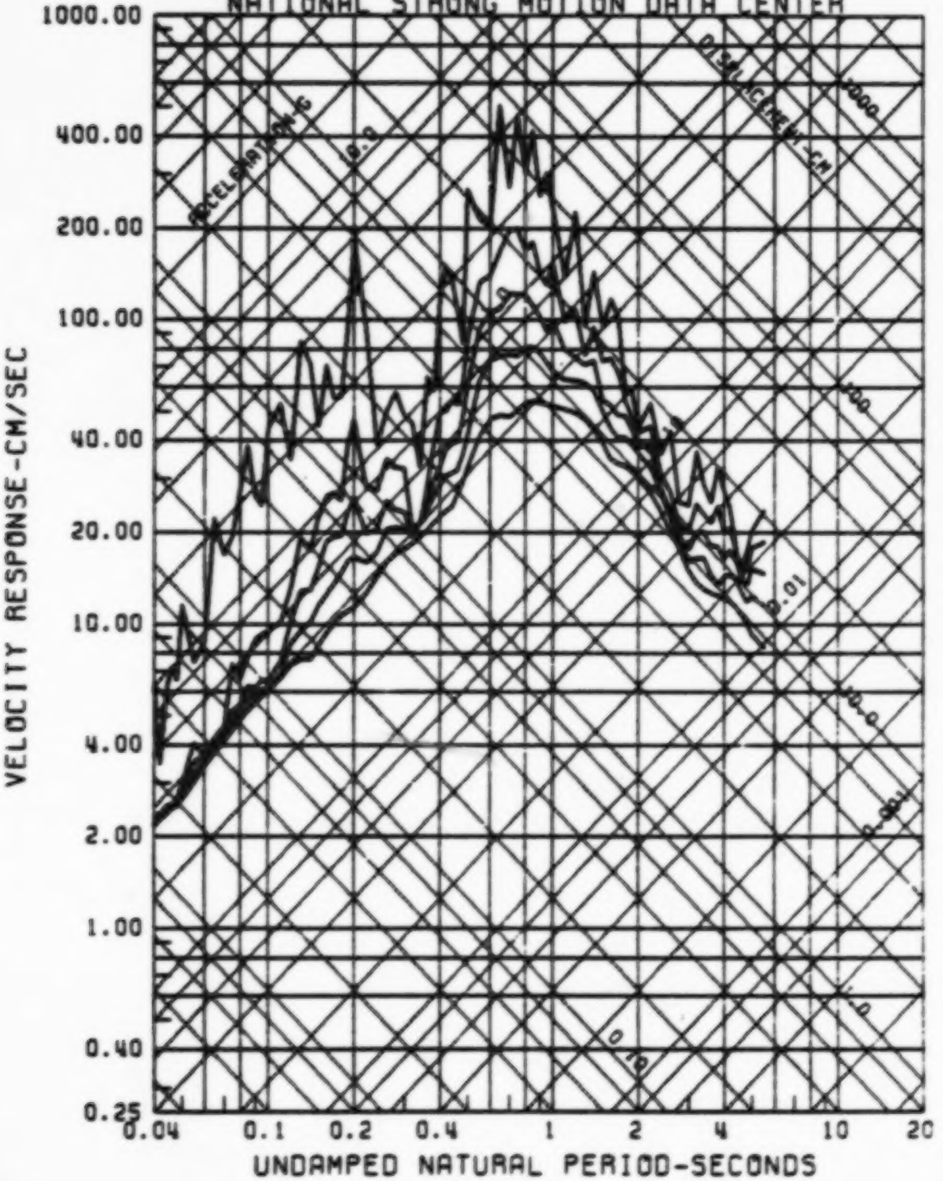
RESPONSE SPECTRA
VINA DEL MAR, D.I.C. 3/03/85, 2247:07UTC 290
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER

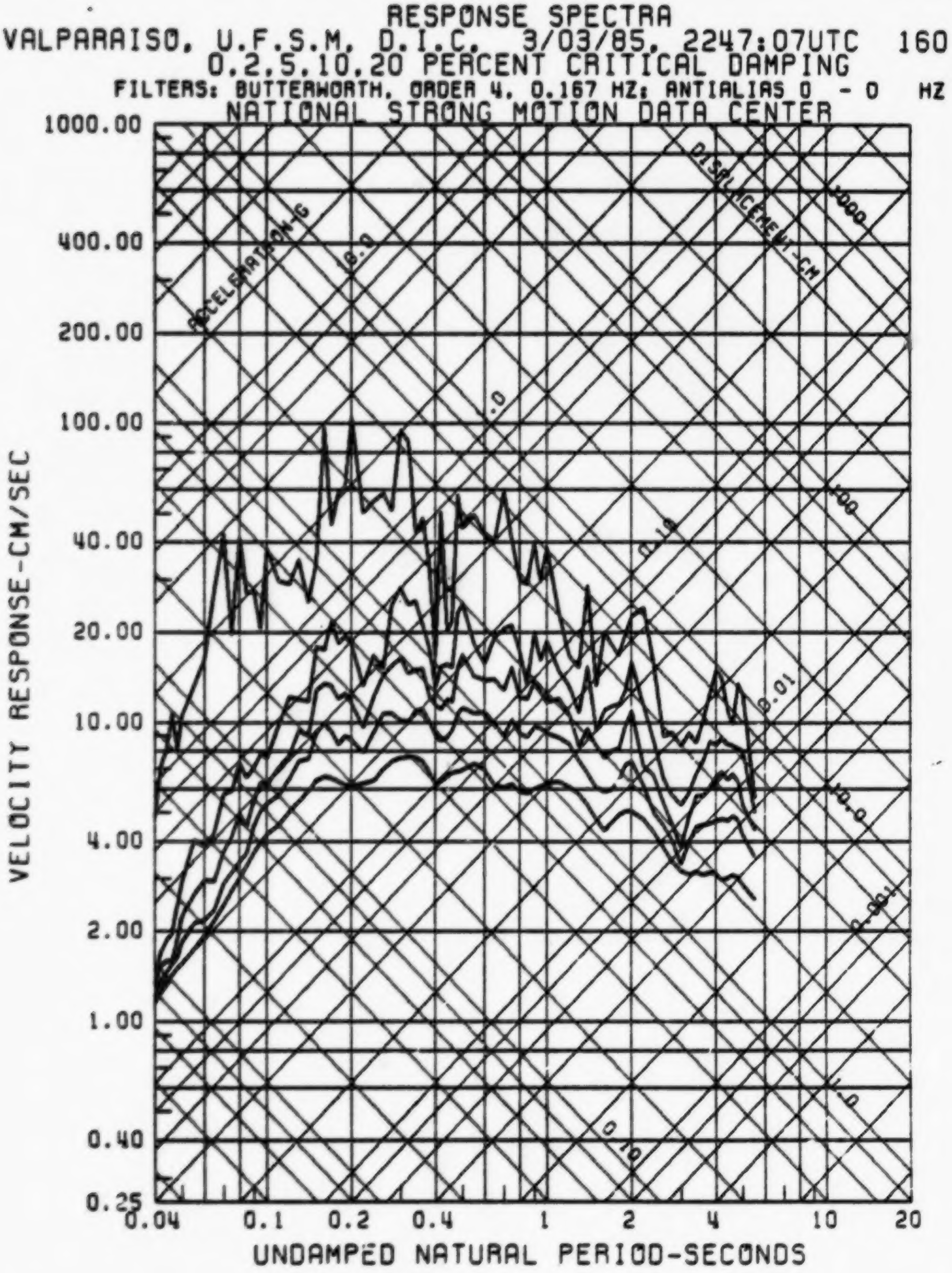


RESPONSE SPECTRA
VINA DEL MAR, D.I.C. 3/03/85, 2247:07UTC UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER

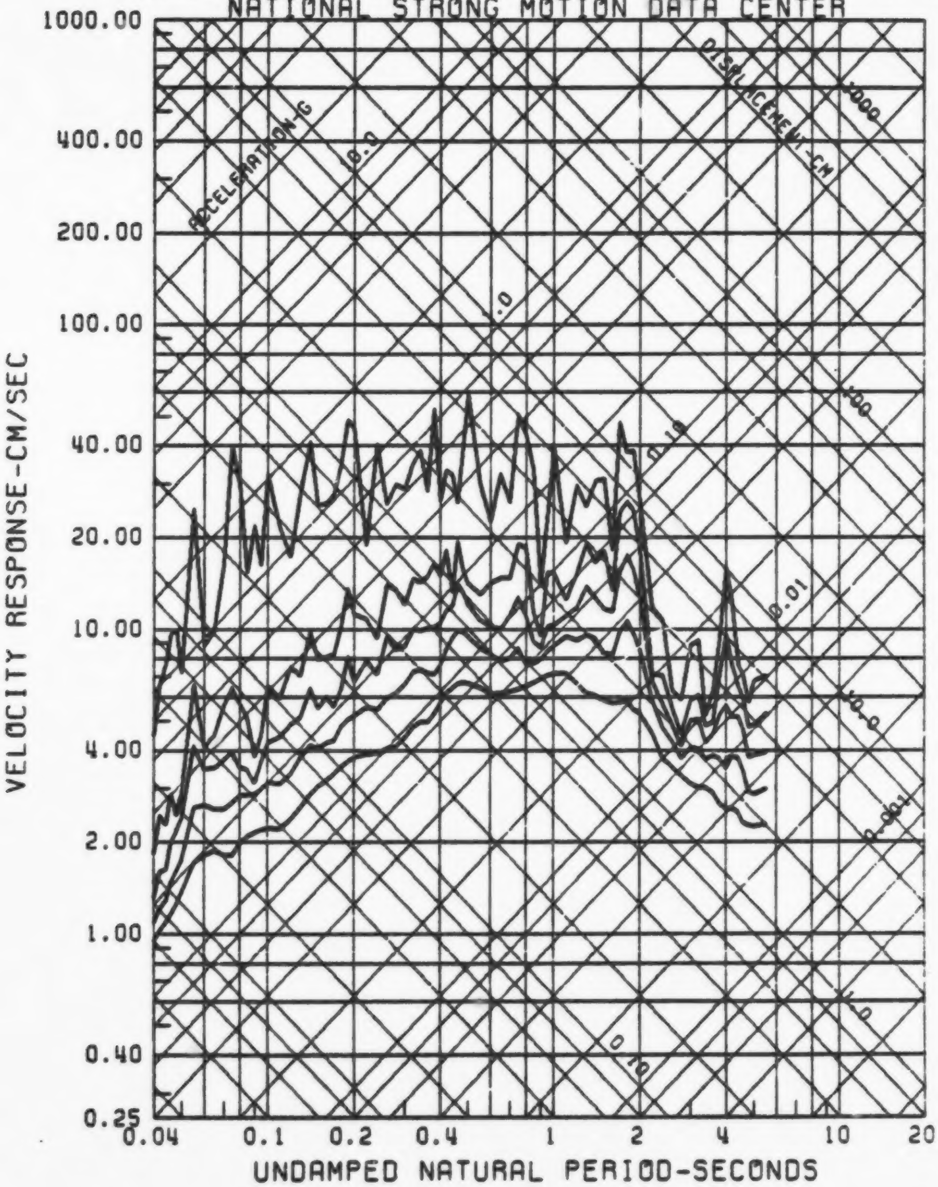


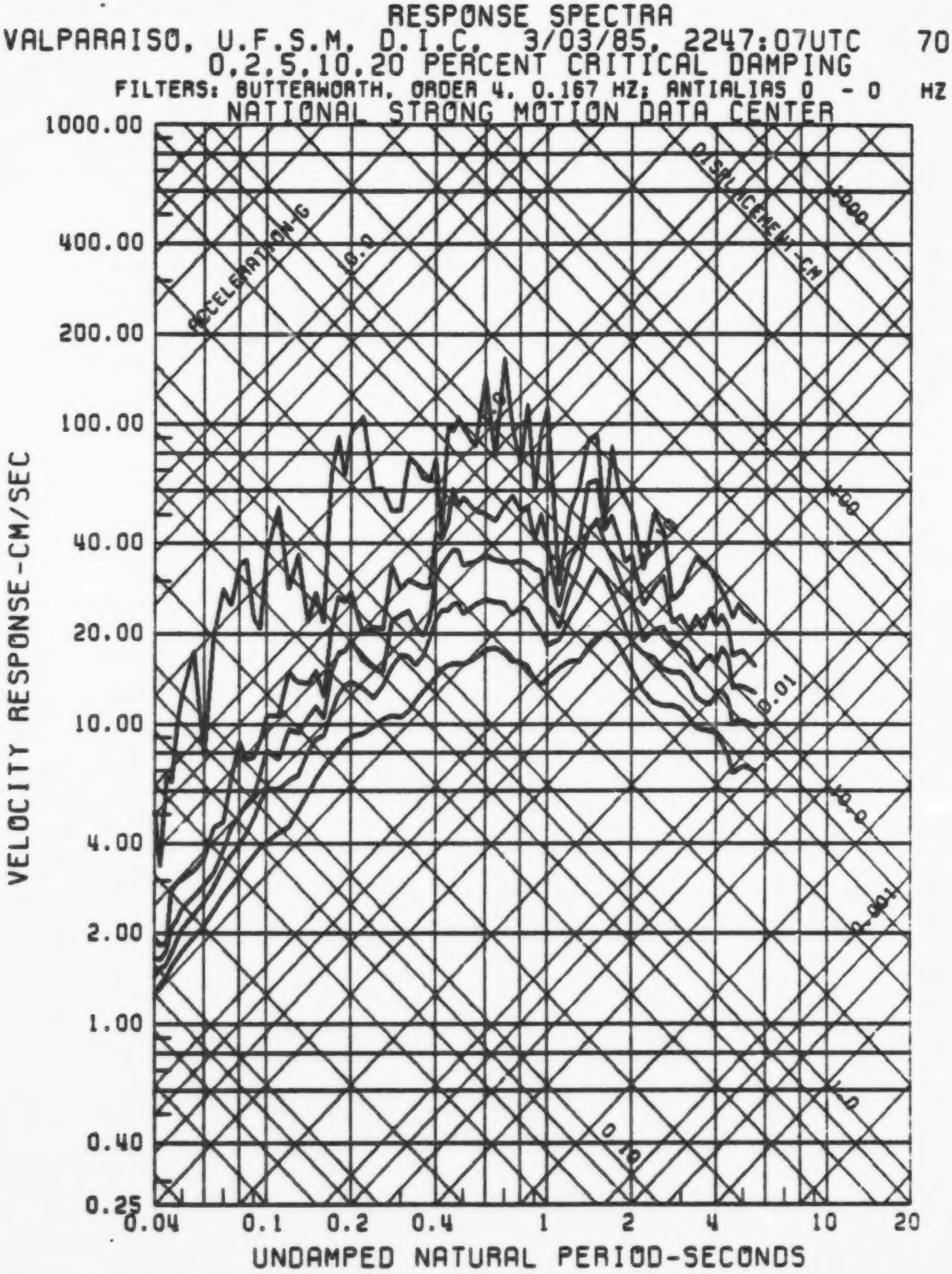
RESPONSE SPECTRA
VINA DEL MAR, D.I.C. 3/03/85, 2247:07UTC 200
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER




RESPONSE SPECTRA
VALPARAISO, U.F.S.M, D.I.C. 3/03/85, 2247:07UTC 160
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
1000.00
400.00
200.00
100.00
40.00
20.00
10.00
4.00
2.00
1.00
0.40
0.25
0.04
0.1
0.2
0.4
1
2
4
10
20
ACCELERATION-G
10.0
1.0
0.10
0.01
0.001
DISPLACEMENT-CM
1000
100
10.0
1.0
0.10

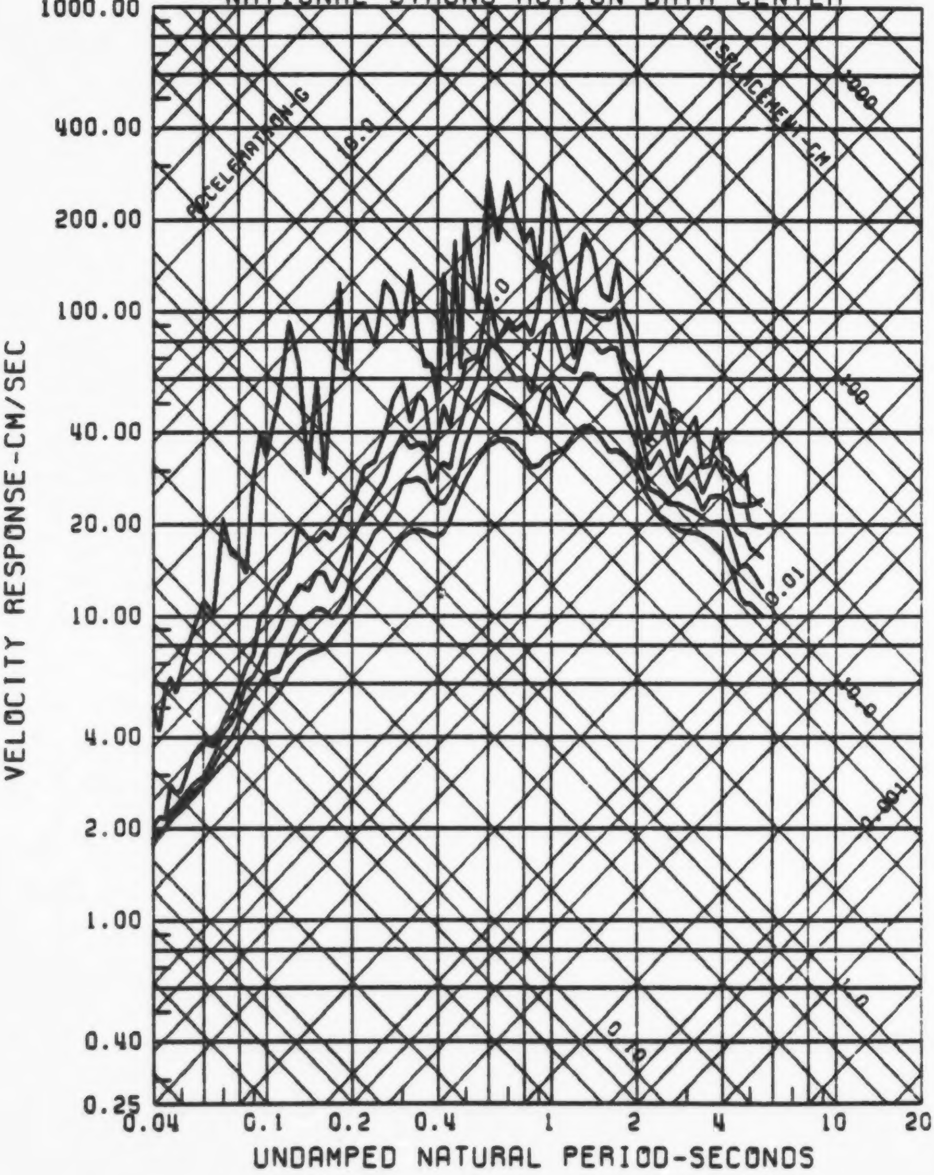
RESPONSE SPECTRA
VALPARAISO, U.F.S.M, D.I.C, 3/03/85, 2247:07UTC UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER



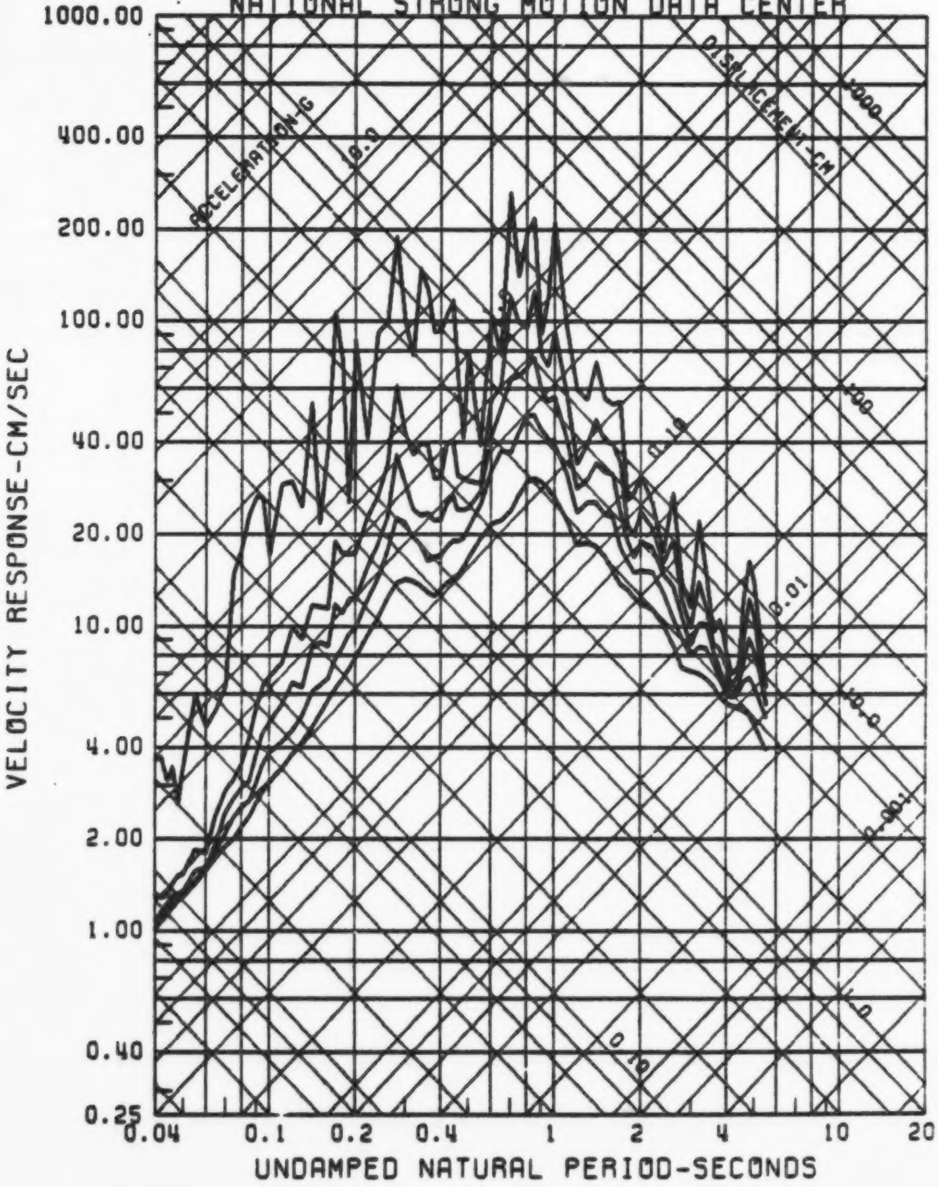


RESPONSE SPECTRA
VALPARAISO, U.F.S.M. D.I.C. 3/03/85, 2247:07UTC 70
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER

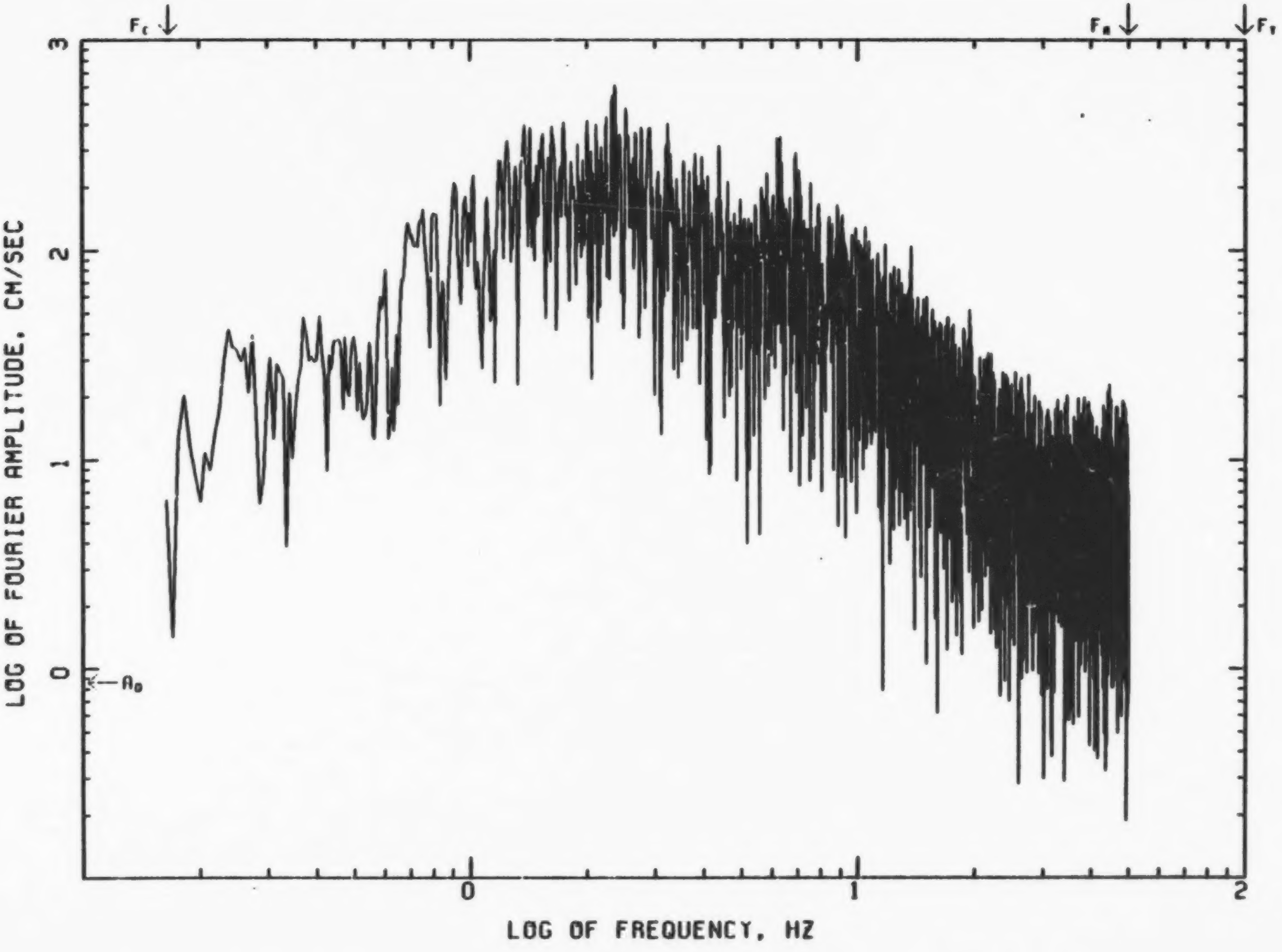
RESPONSE SPECTRA
VALPARAISO EL ALMENDRAL, D.I.C. 3/03/85, 2247:07UTC 50
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER



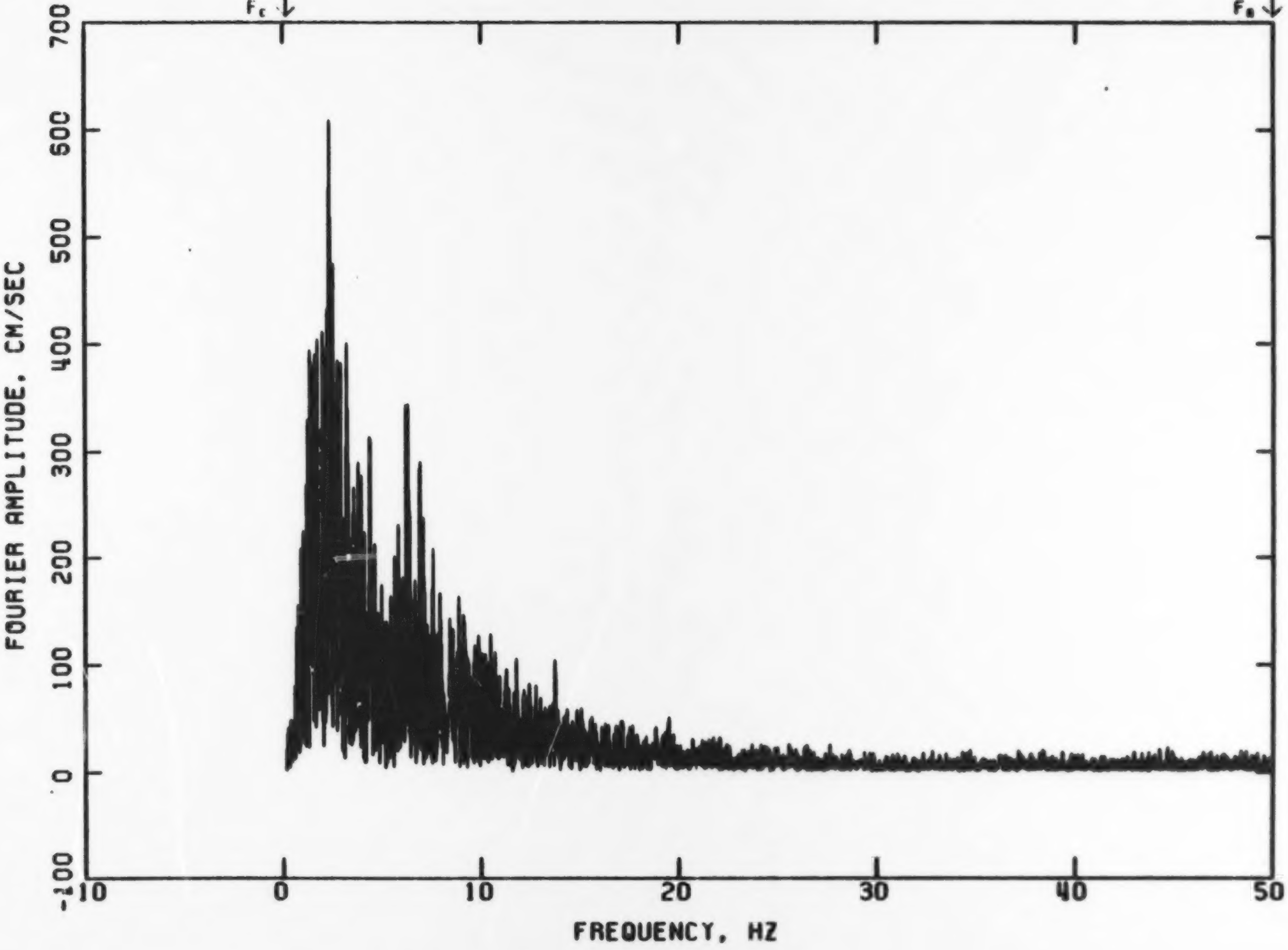
RESPONSE SPECTRA
VALPARAISO EL ALMENDRAL, D.I.C. 3/03/85, 2247:07UTC 140
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.167 HZ; ANTIALIAS 0 - 0 HZ
NATIONAL STRONG MOTION DATA CENTER



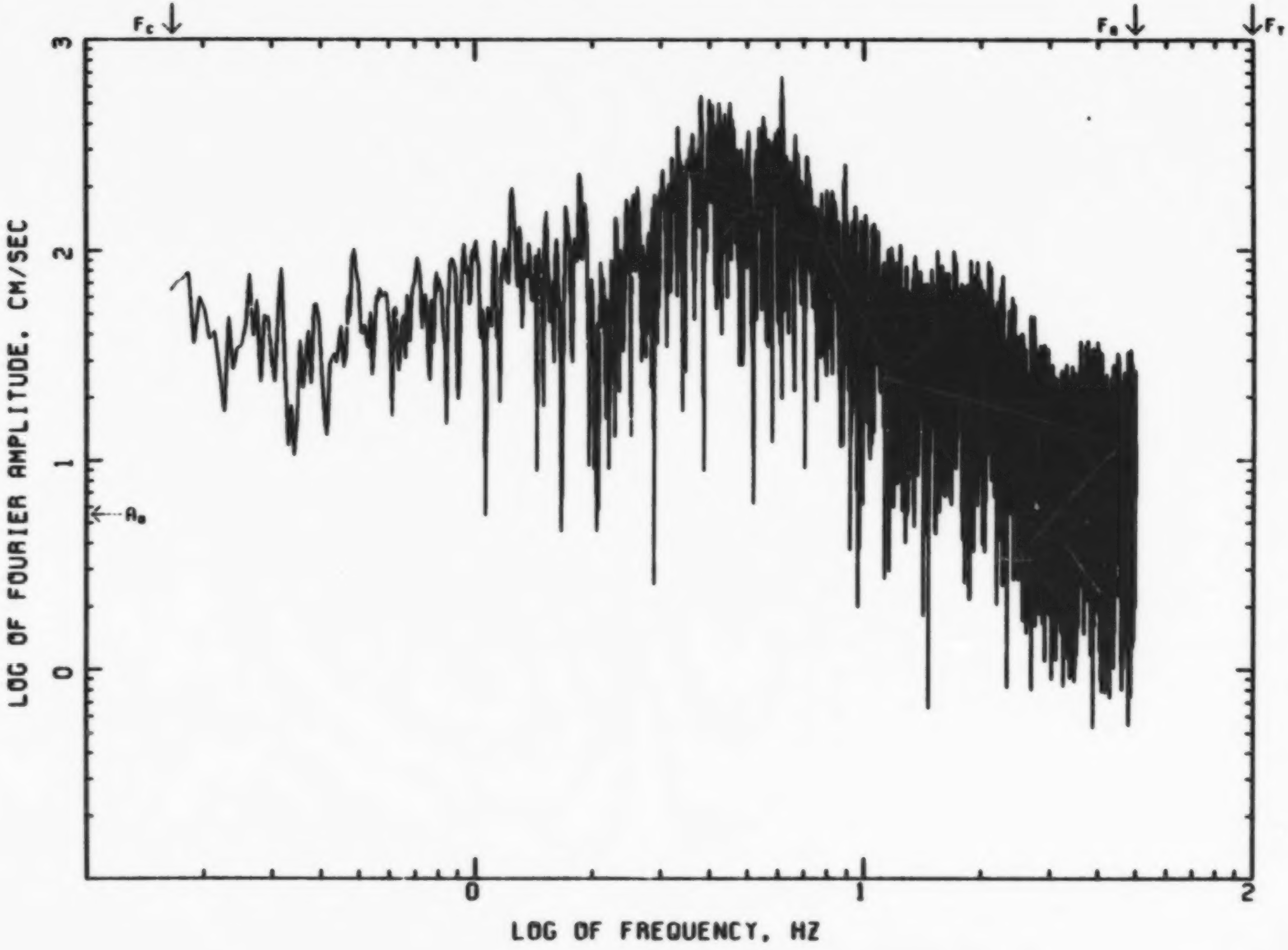
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO, D.I.C
100 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



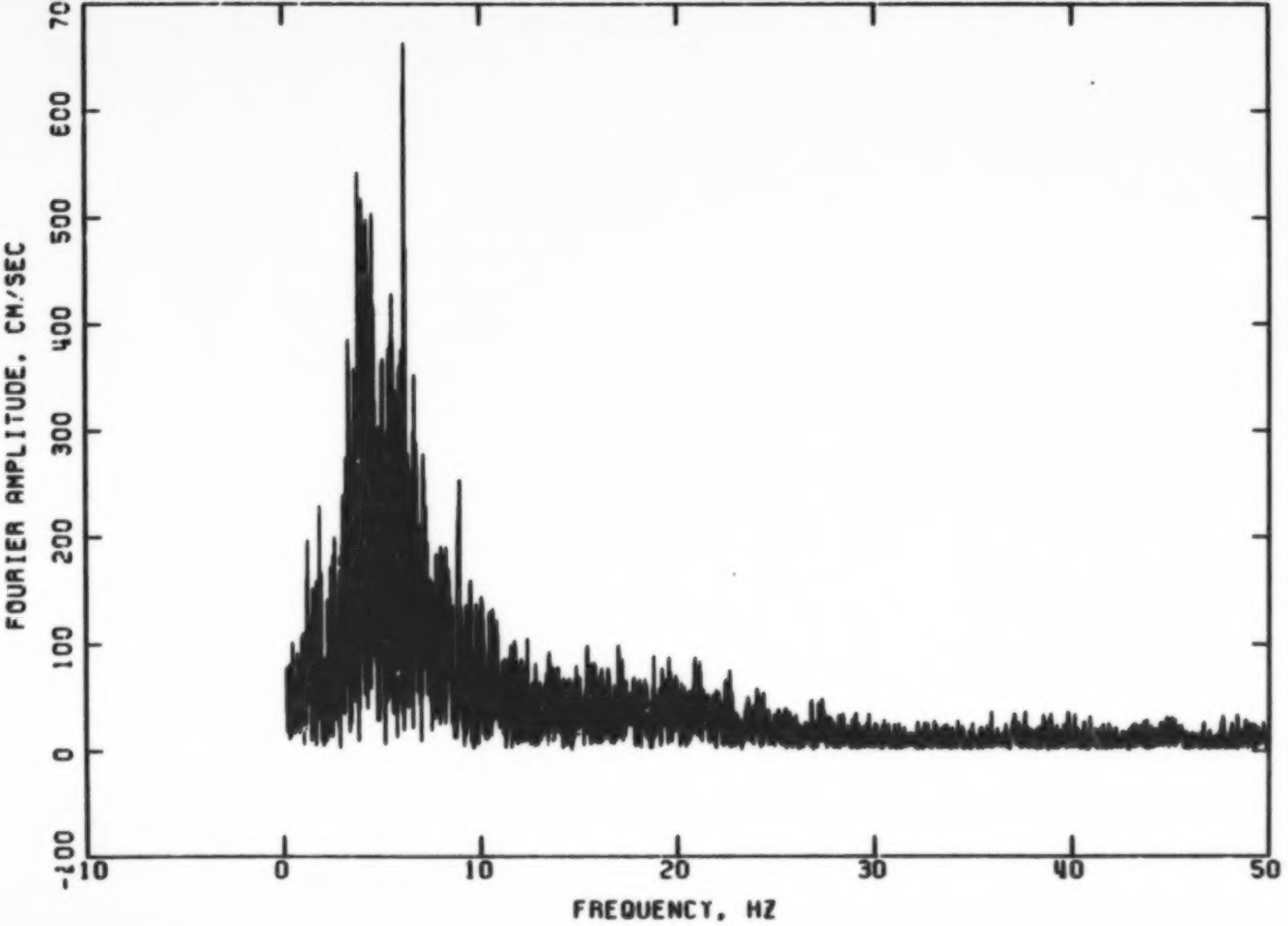
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO, D.I.C
100 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



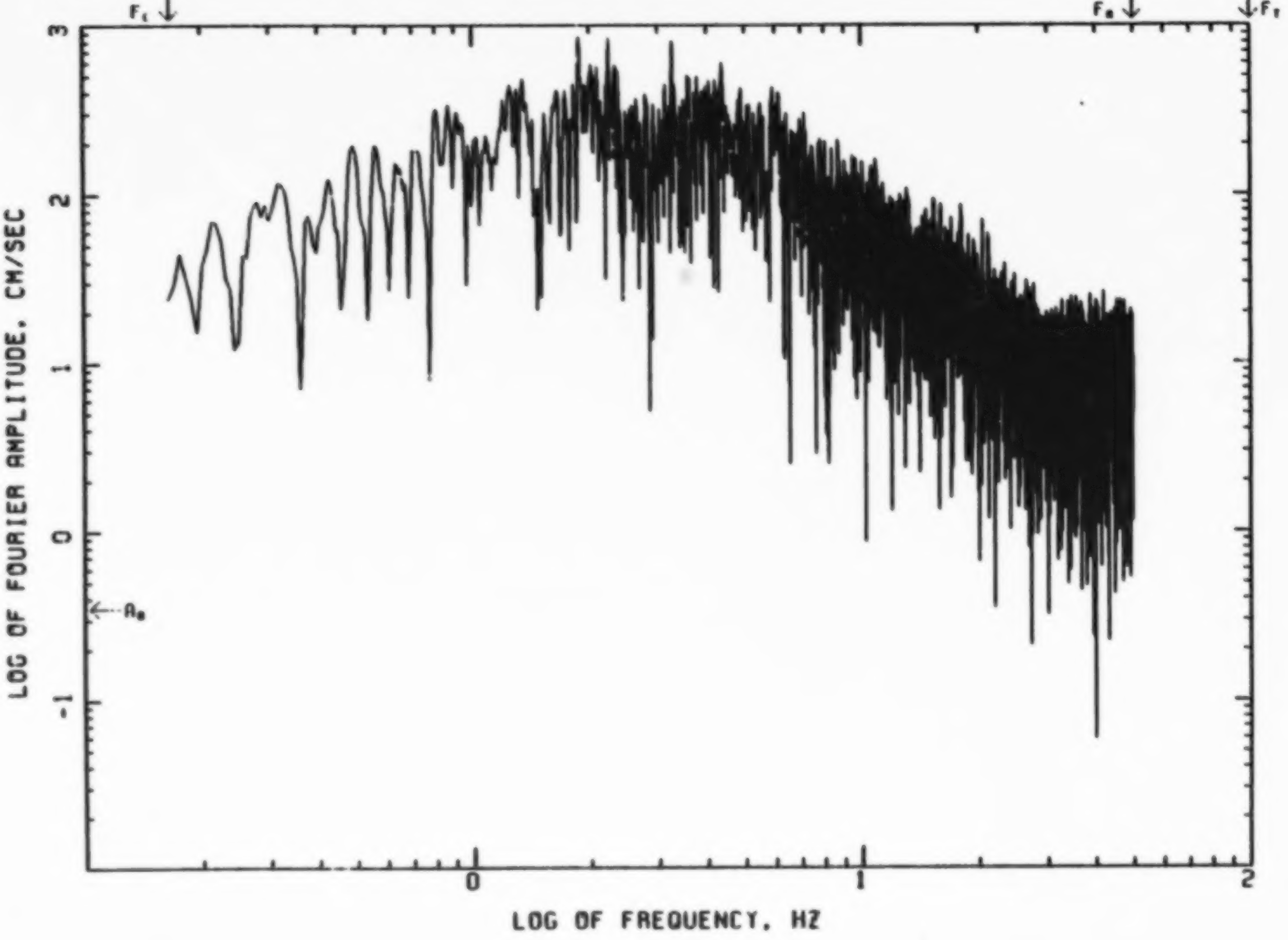
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO, D.I.C
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



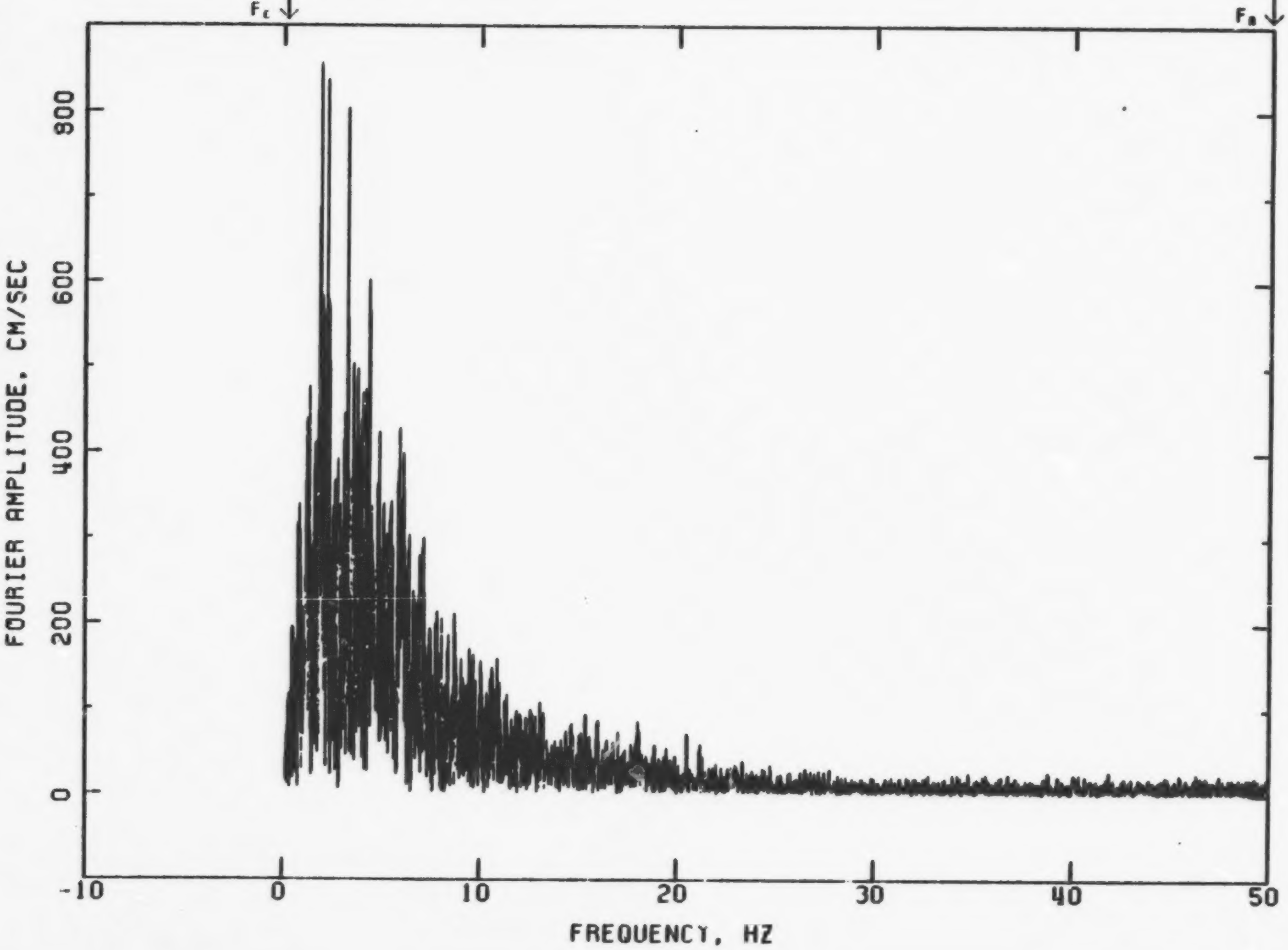
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO, D.I.C
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



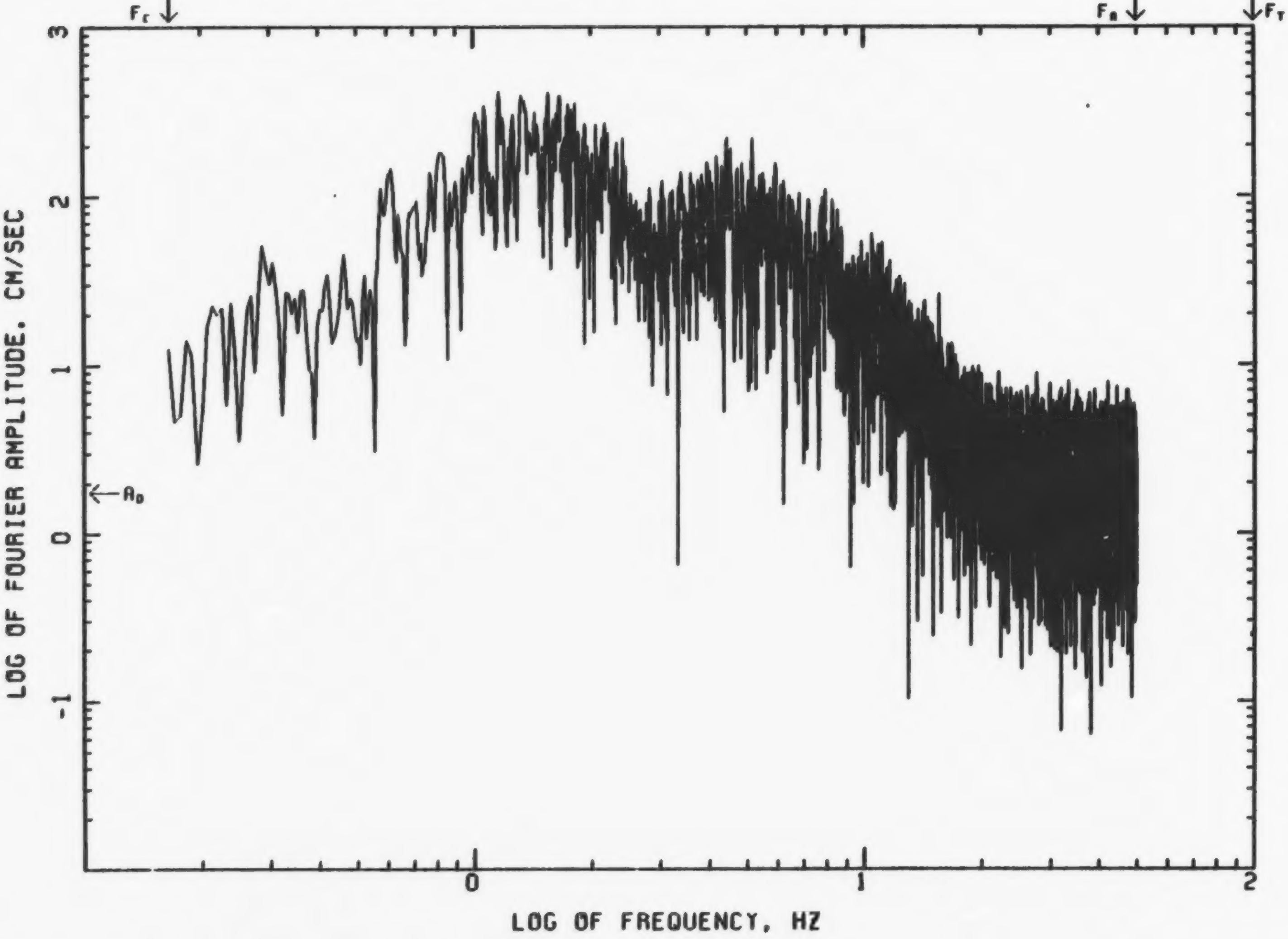
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO, D.I.C
010 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



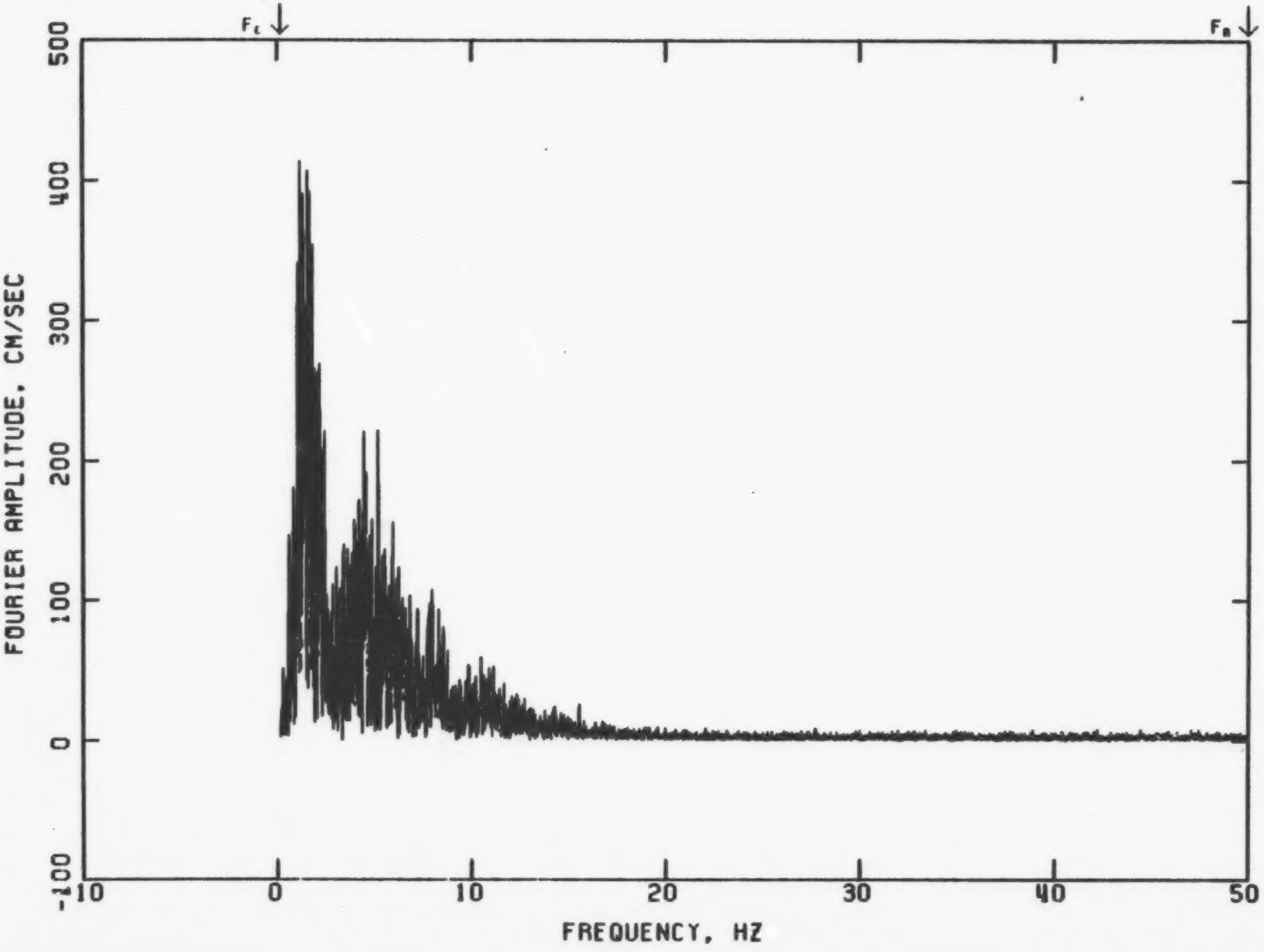
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
LLOLLEO, D.I.C
010 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



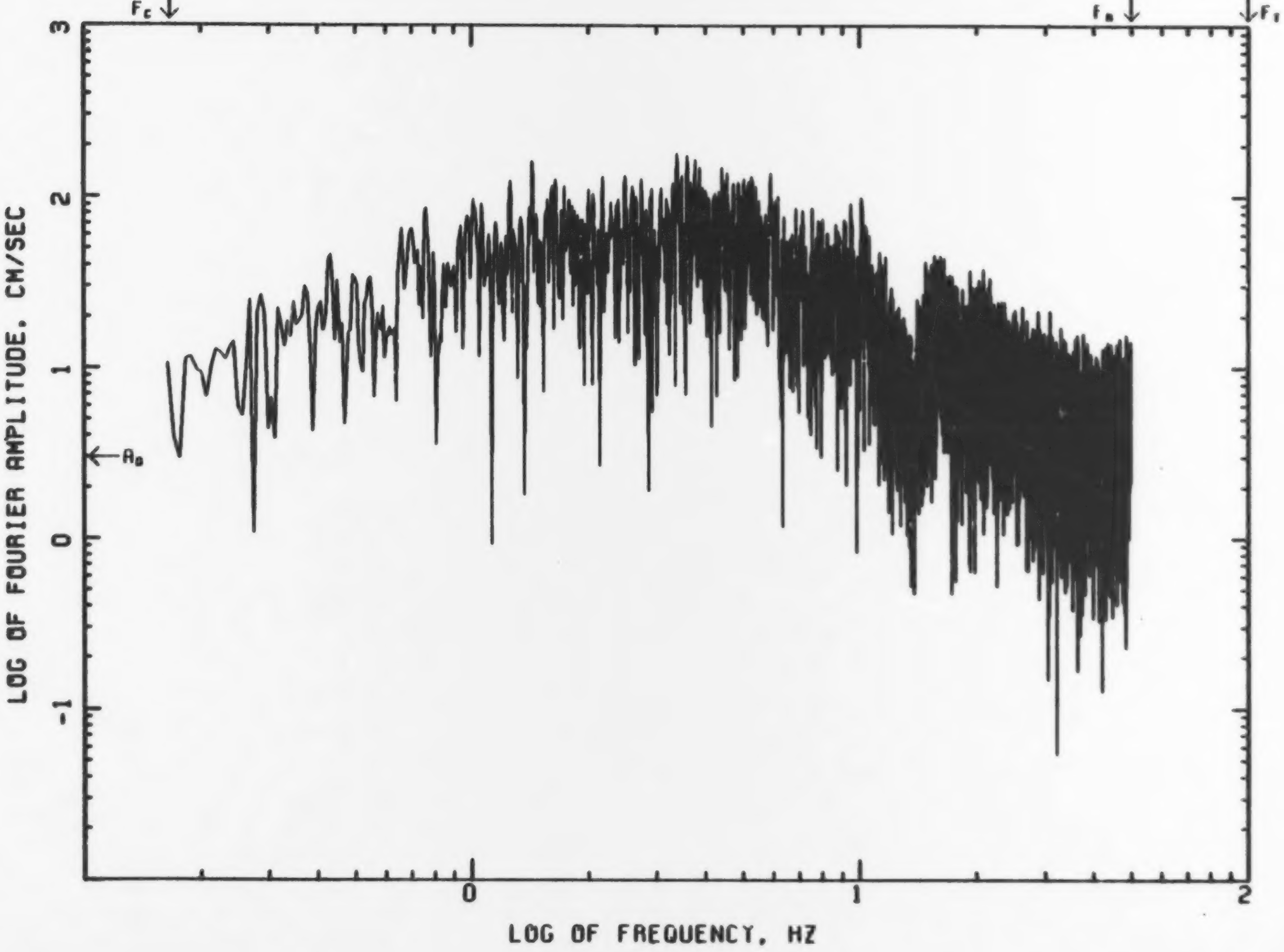
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VINA DEL MAR, D.I.C
290 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



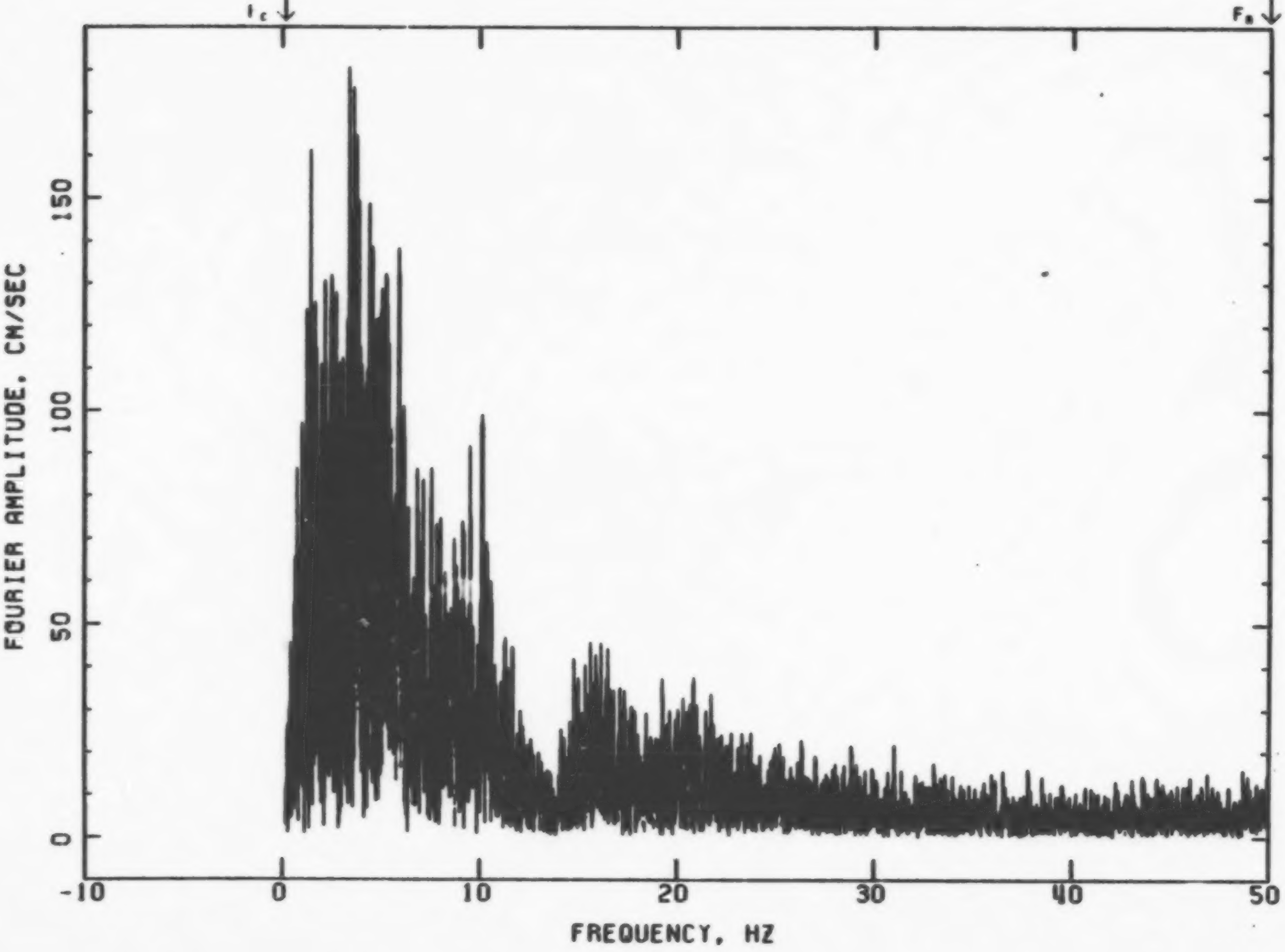
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VINA DEL MAR, D.I.C
290 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



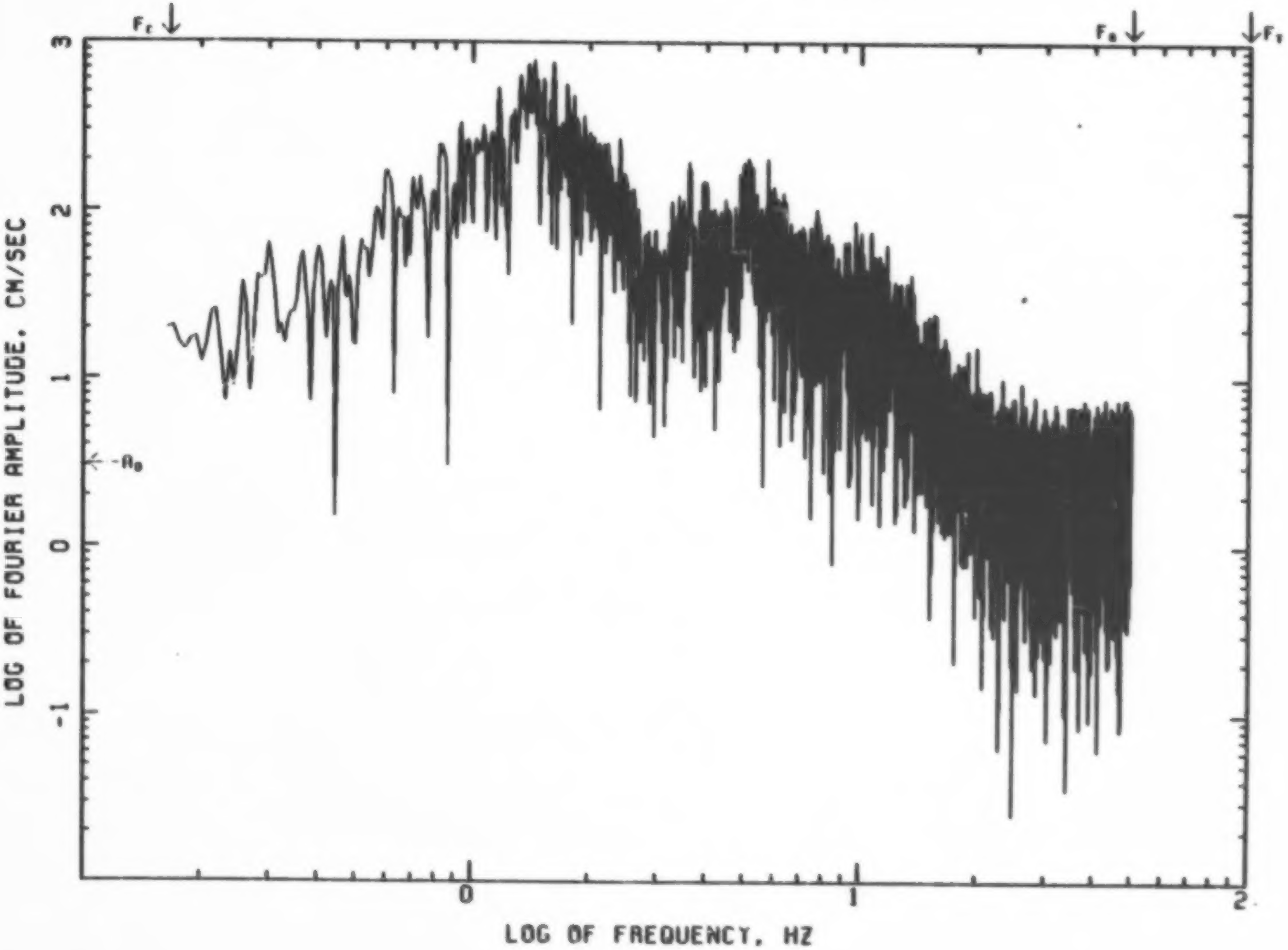
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VINA DEL MAR, D.I.C
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



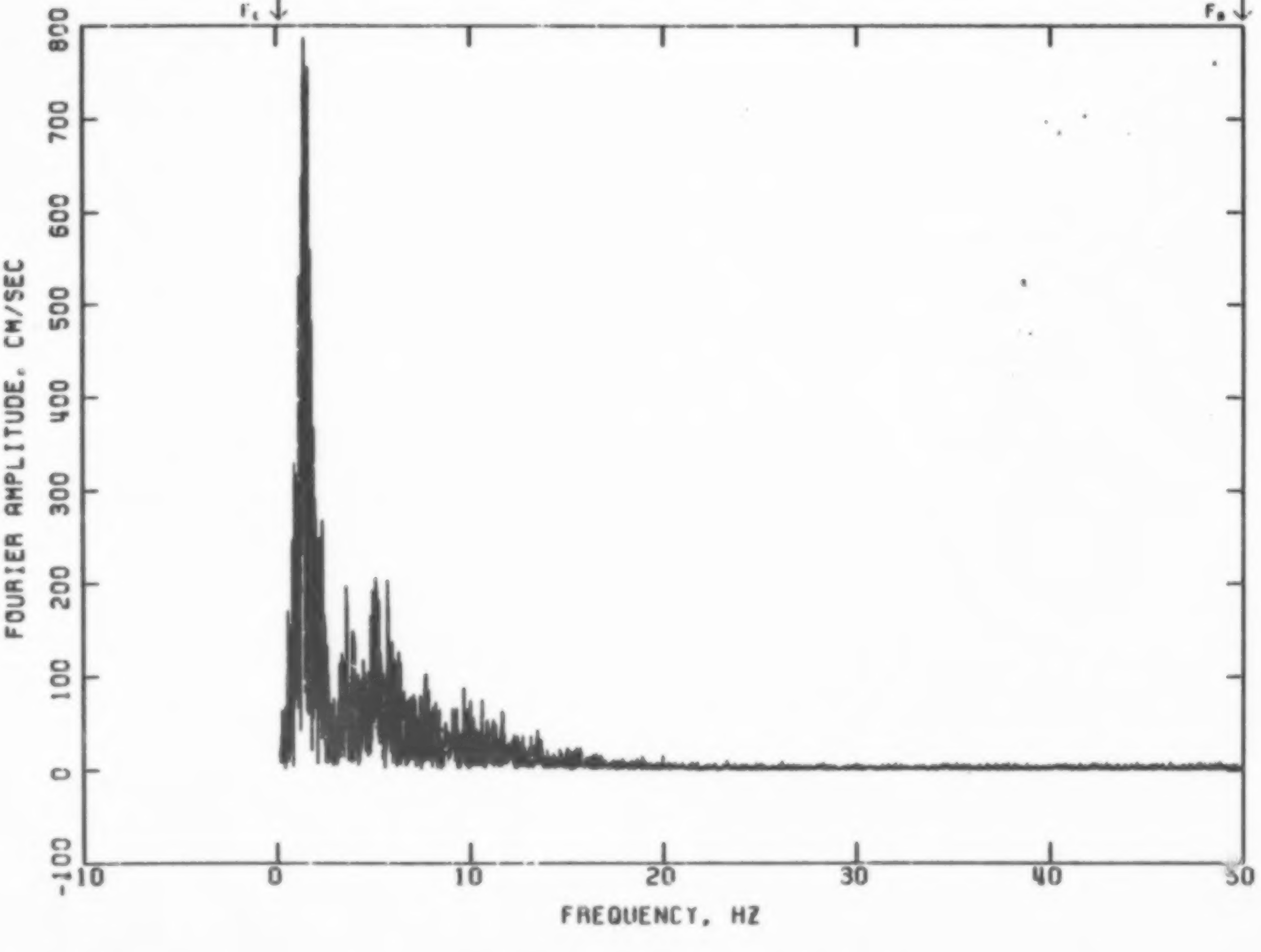
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VINA DEL MAR, D.I.C
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



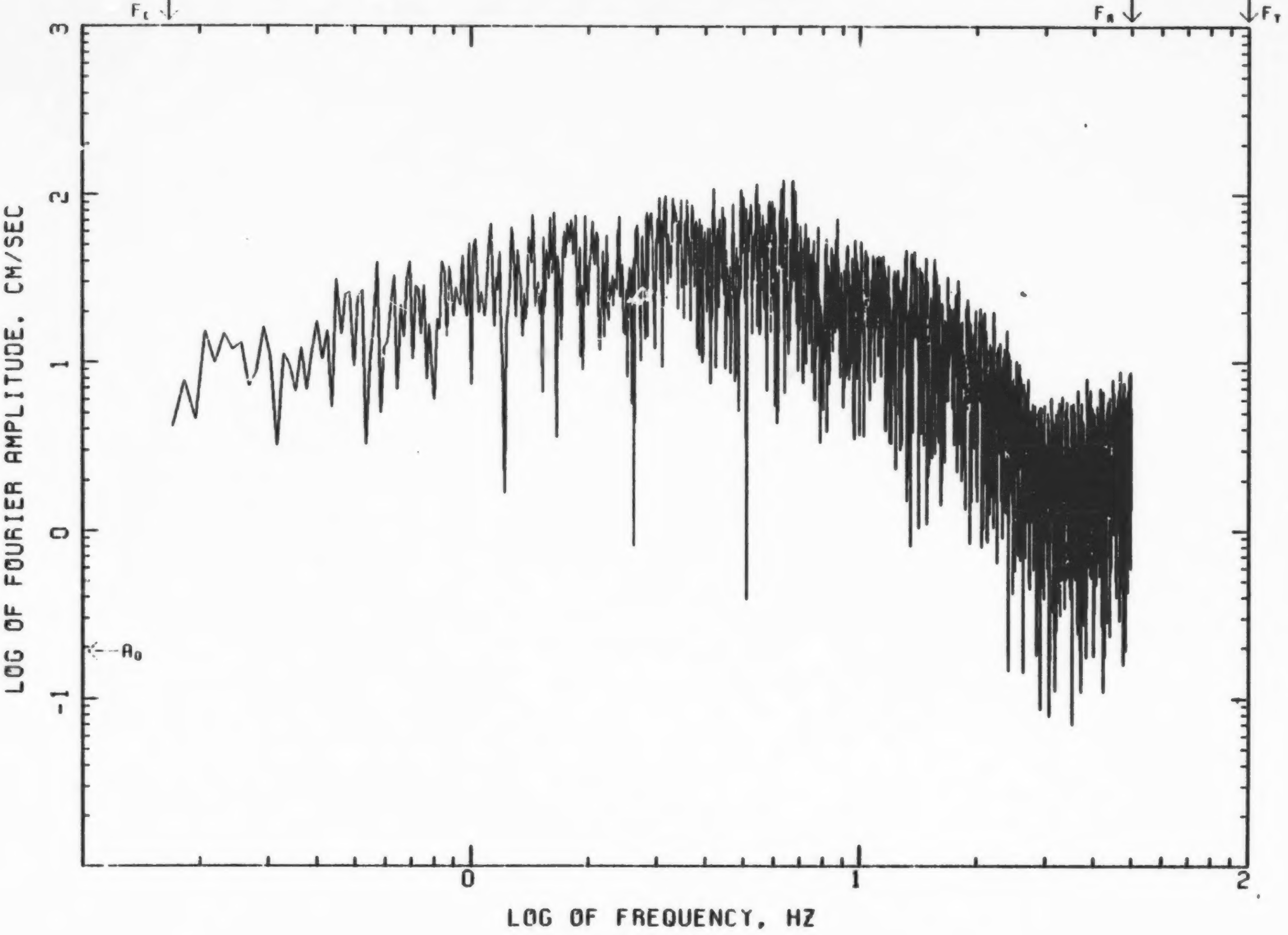
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VINA DEL MAR, D.I.C
200 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



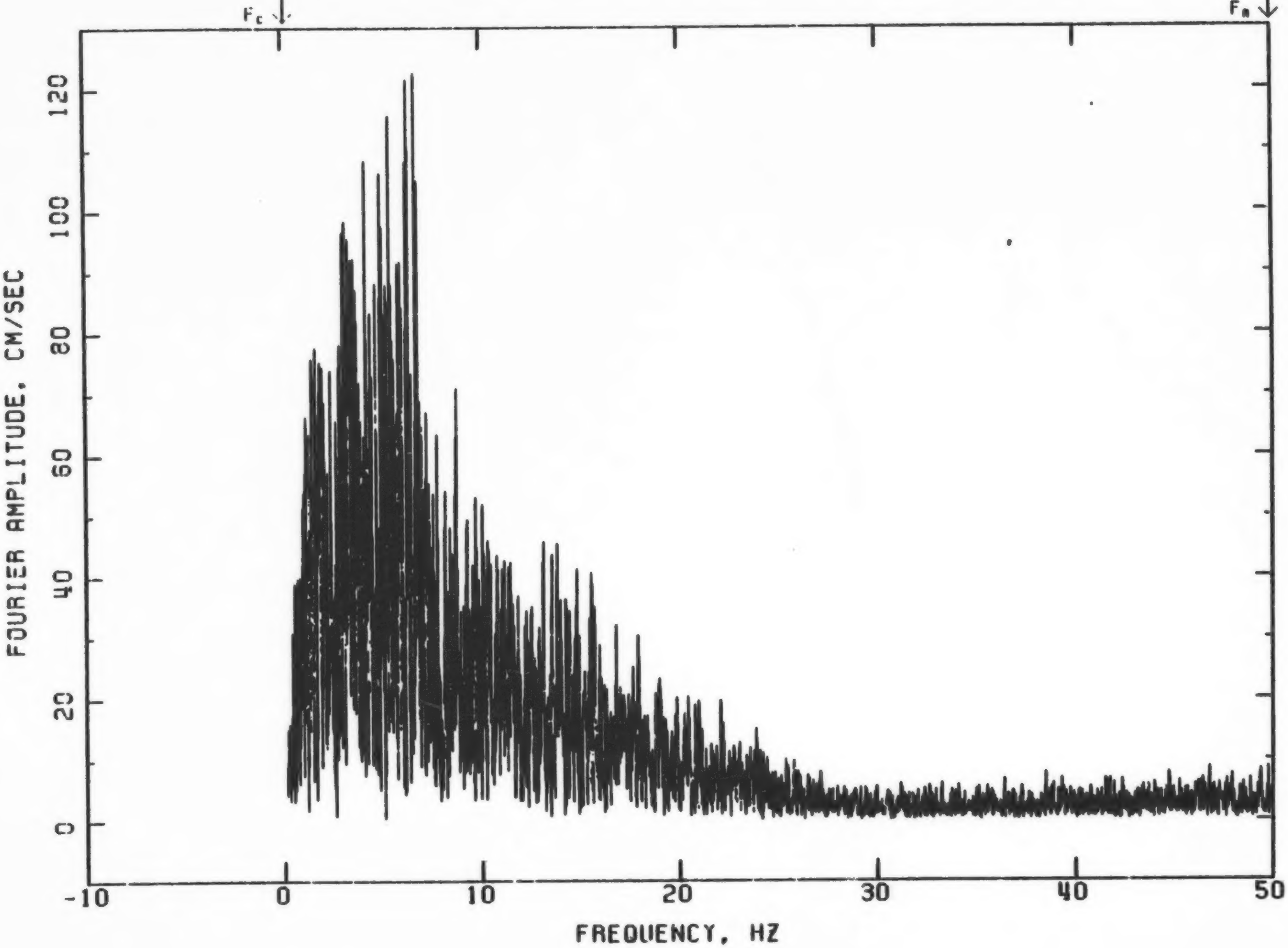
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VINA DEL MAR, D.I.C
200 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



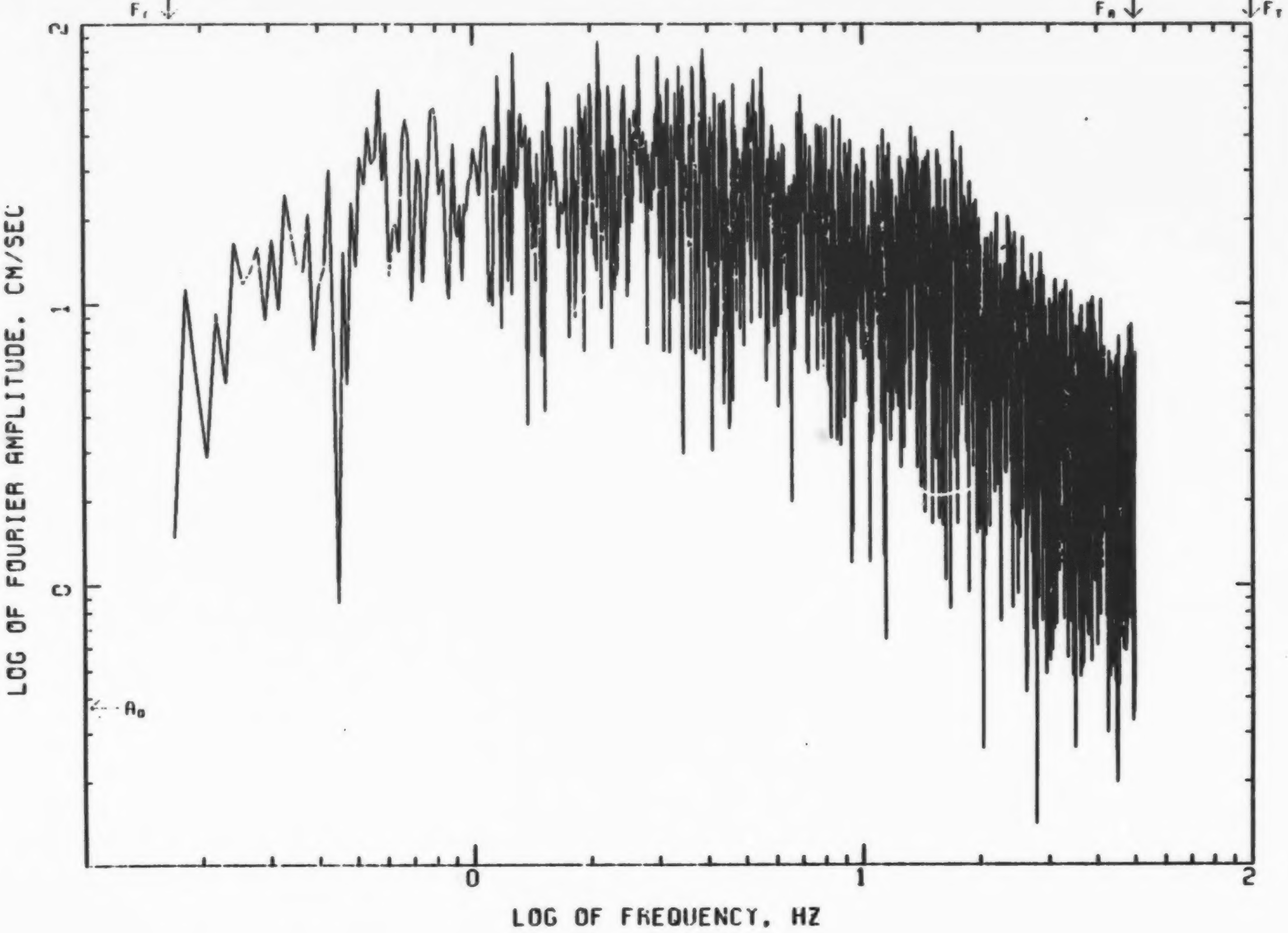
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO, U.F.S.M, D.I.C
160 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



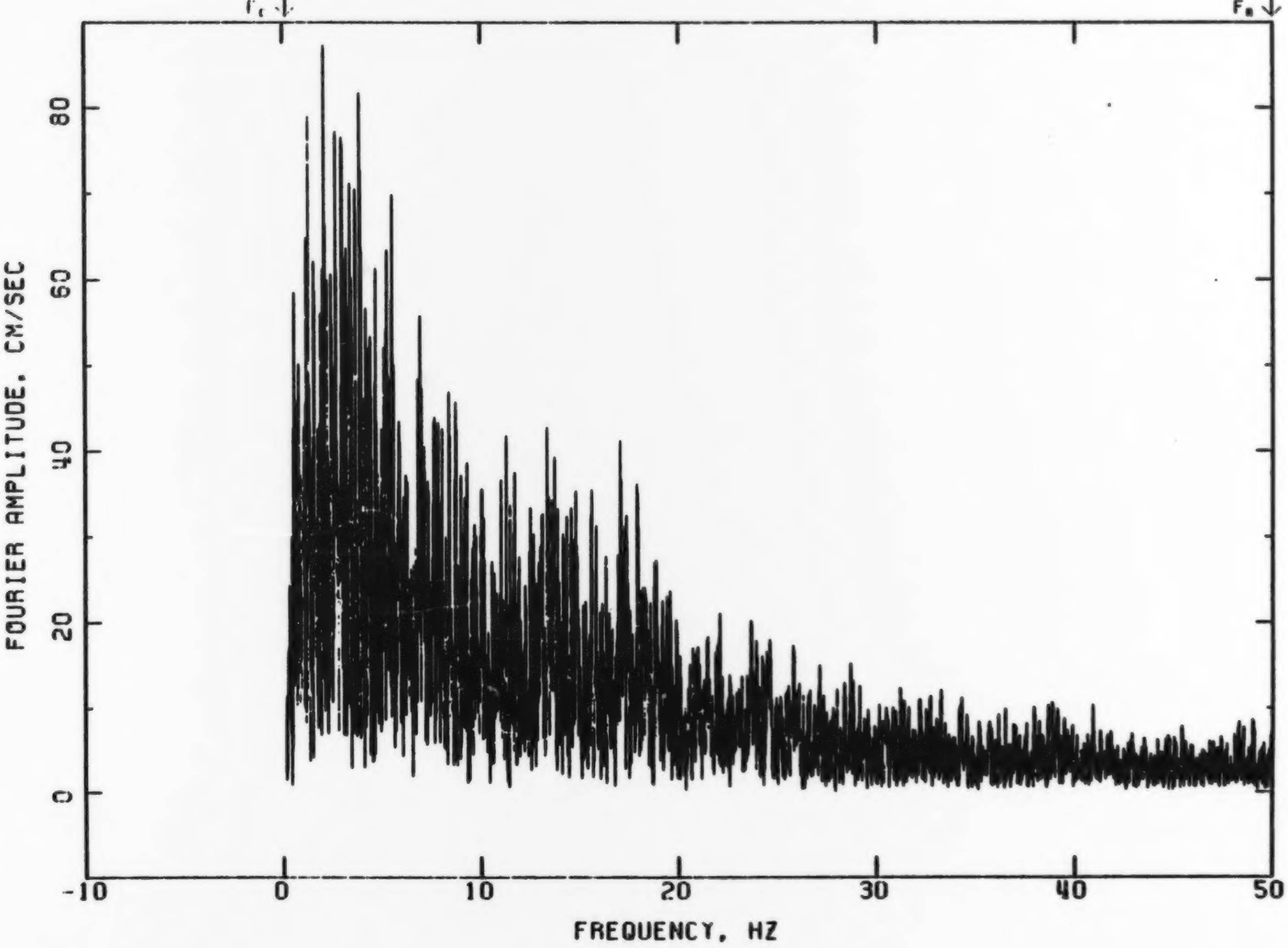
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO, U.F.S.M, D.I.C
160 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



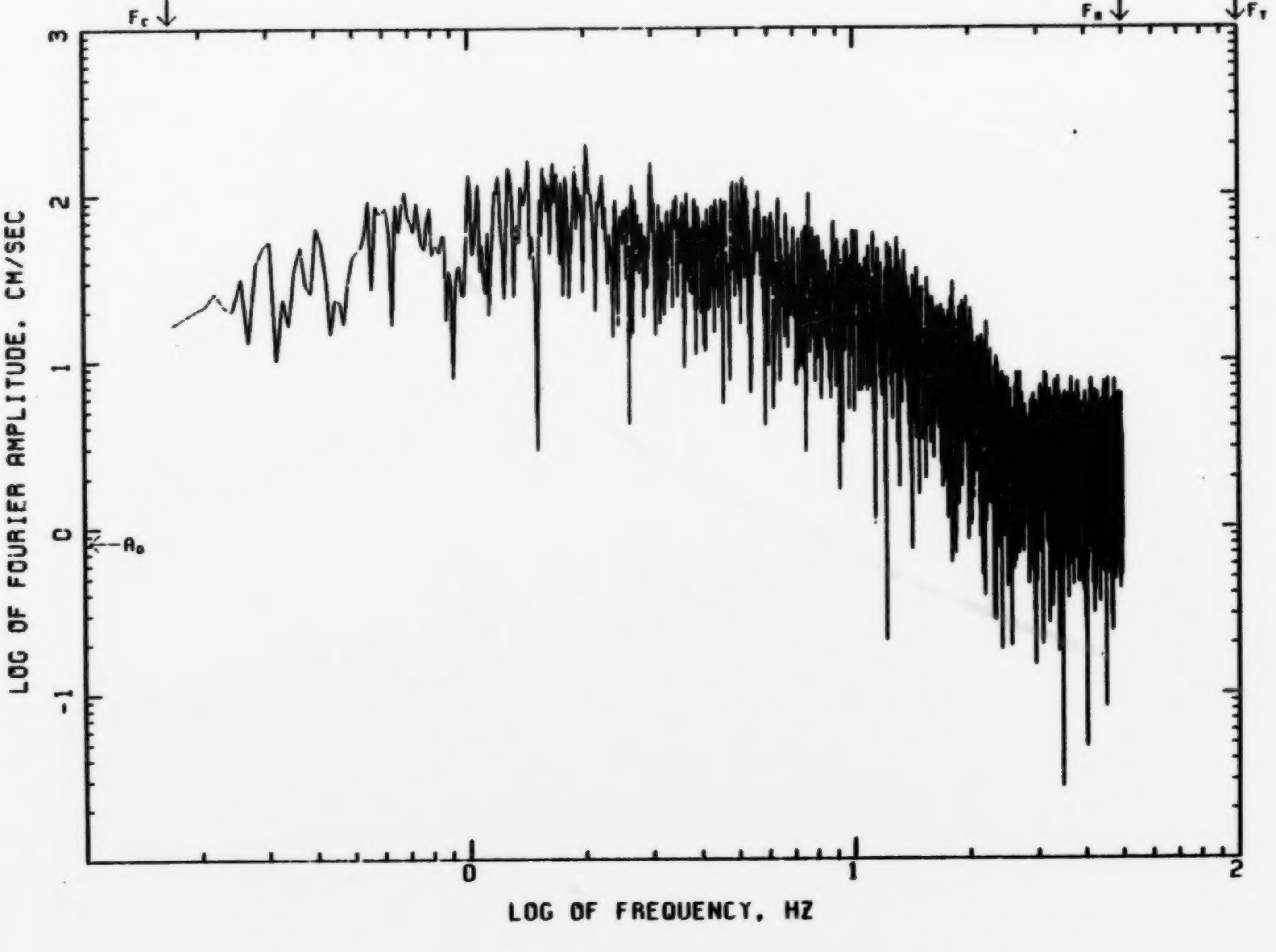
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO, U.F.S.M, D.I.C
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



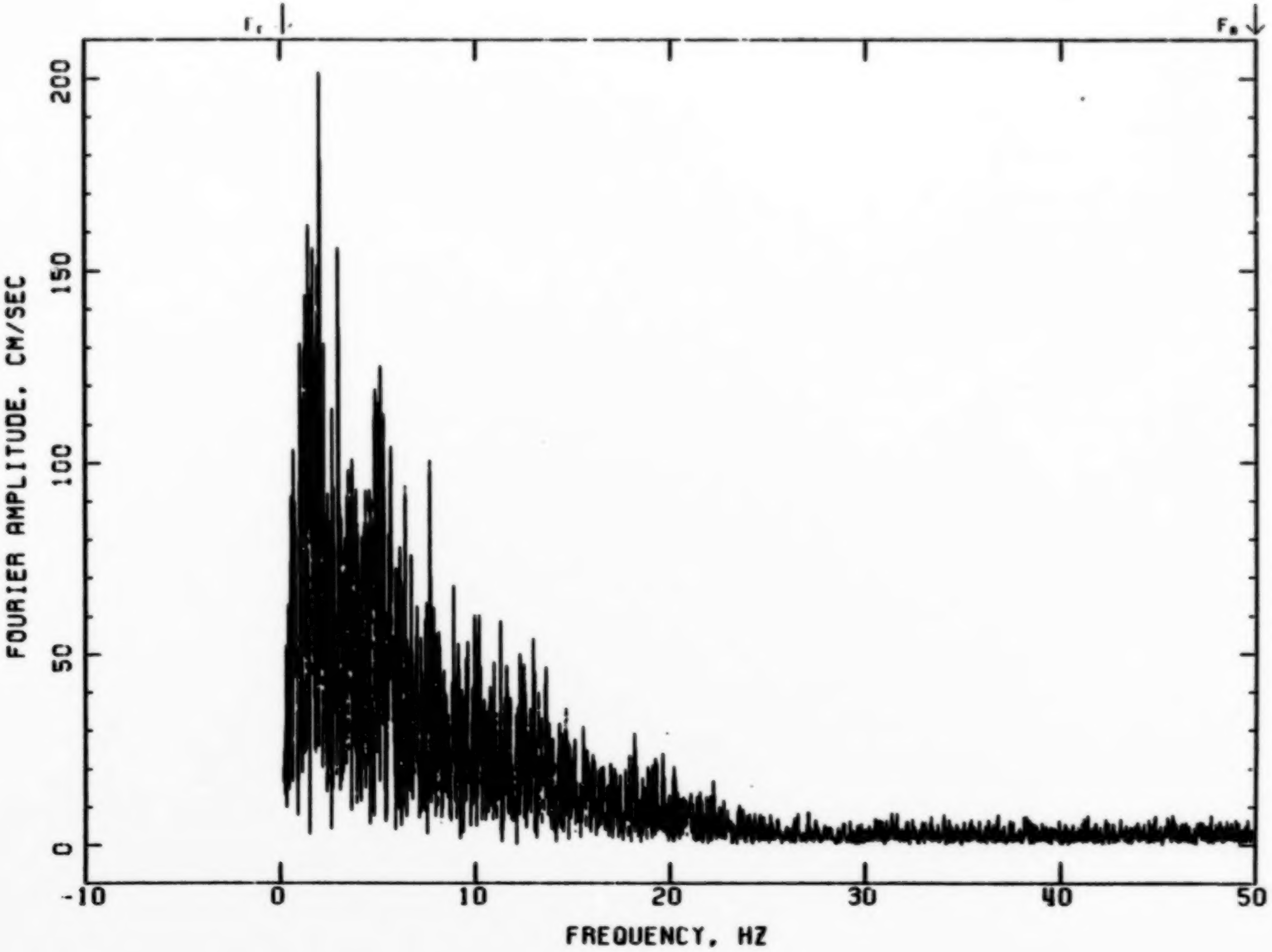
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO, U.F.S.M, D.I.C
UP
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



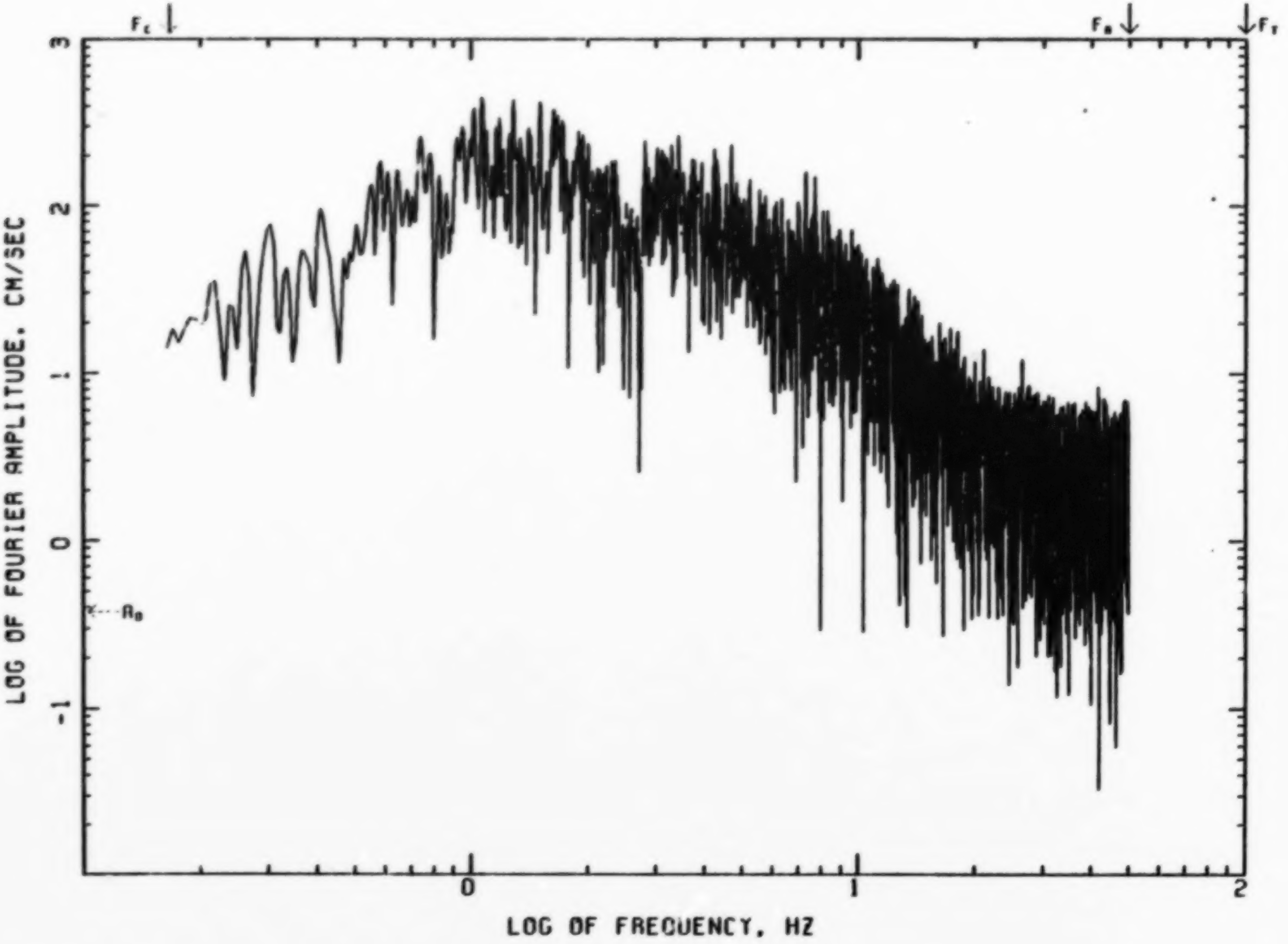
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO, U.F.S.M, D.I.C
070 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



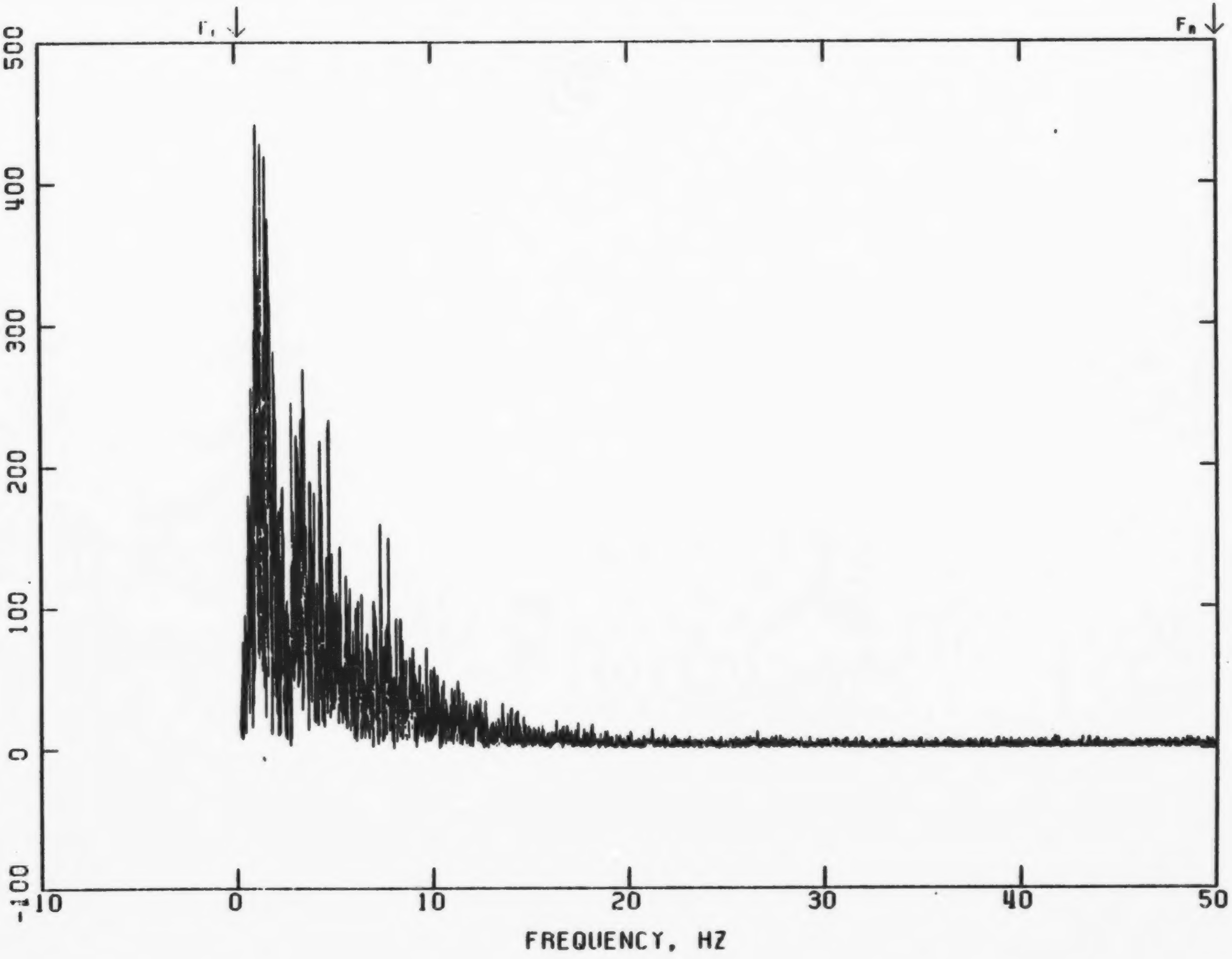
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO, U.F.S.M, D.I.C
070 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



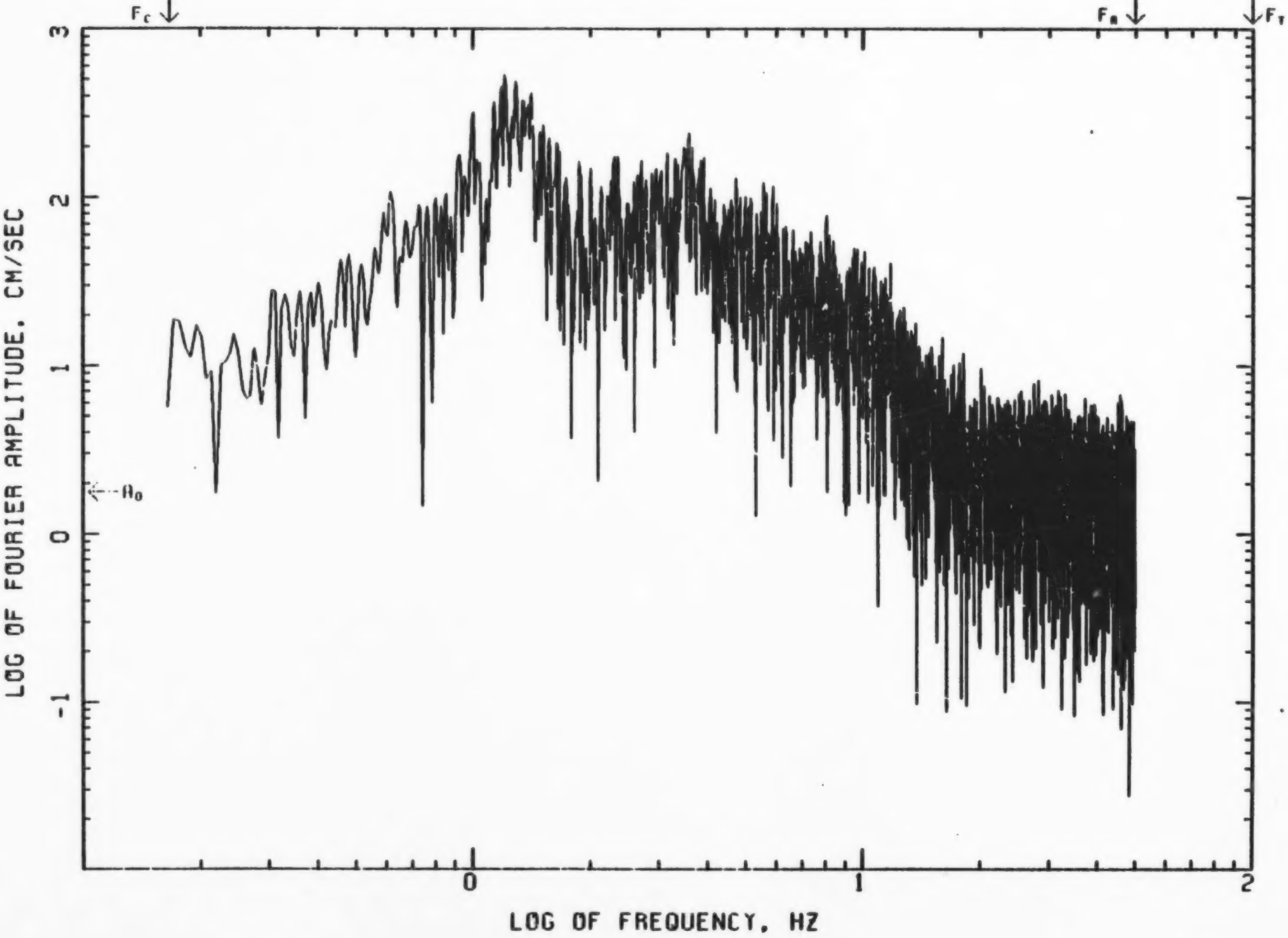
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO EL ALMENDRAL, D.I.C
050 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO EL ALMENDRAL, D.I.C
050 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO EL ALMENDRAL, D.I.C
140 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE



FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
VALPARAISO EL ALMENDRAL, D.I.C
140 DEGREES
EARTHQUAKE OF MARCH 3, 1985
BUTTERWORTH AT .167 HZ, ORDER 4
COMPUTING OPTIONS= ZCROSS,NONOISE